

**DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ATOMIC ENERGY DEFENSE ACTIVITIES
WEAPONS ACTIVITIES**

PROPOSED APPROPRIATION LANGUAGE

For Department of Energy expenses, including the purchase, construction and acquisition of plant and capital equipment and other incidental expenses necessary for atomic energy defense weapons activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; the purchase of one fixed wing aircraft; and the purchase of passenger motor vehicles (not to exceed [70]32 for replacement only and one bus), [\$4,146,692,000] to become available on October 1 of the year specified and to remain available until expended: fiscal year 1999, \$4,500,000,000; fiscal year 2000, \$518,674,000; fiscal year 2001, \$251,096,000; fiscal year 2002, \$145,997,000; fiscal year 2003, \$57,804,000; fiscal year 2004, \$32,318,000; fiscal year 2005, \$4,451,000; and fiscal year 2006, \$1,704,000. (Energy and Water Development Appropriations Act, 1998.)

**DEPARTMENT OF ENERGY
ATOMIC ENERGY DEFENSE ACTIVITIES
FY 1999 FIVE-YEAR BUDGET PLAN
BUDGET AUTHORITY (BA)
BY APPROPRIATION
(dollars in millions)**

	1997	1998	1999	2000	2001	2002	2003
<u>Weapons Activities, BA:</u>							
Stockpile Stewardship							
Operation and Maintenance (O&M)							
Core Stockpile Stewardship	826	907	989	979	1,002	1,028	1,054
Accelerated Strategic Computing Initiative/Stockpile Computing	307	374	516	599	631	685	704
Inertial Confinement Fusion	234	215	214	203	258	272	283
Technology Partnerships	59	56	60	30	30	30	30
Education	10	9	9	9	9	9	9
Subtotal, Stockpile Stewardship O&M	1,436	1,561	1,788	1,820	1,930	2,024	2,080
Construction							
99-D-102, Rehabilitation of maintenance facility, LLNL	0	0	7	1	0	0	0
99-D-103, Isotope sciences facilities, LLNL	0	0	4	10	5	0	0
99-D-104, Protection of real property, LLNL	0	0	7	6	6	0	0
99-D-105, Central health physics calibration facility, LANL	0	0	4	0	0	0	0
99-D-106, Model validation & system certification test center, SNL	0	0	2	9	7	0	0
99-D-107, Joint computational engineering laboratory, JCEL, SNL	0	0	2	11	16	0	0
99-D-108, Renovate existing roadways, NTS	0	0	2	9	0	0	0
97-D-102, Dual-axis radiographic hydrotest facility, LANL	0	46	36	61	35	0	0
96-D-102, Stockpile stewardship facilities revitalization, Phase VI, VL	19	20	20	9	4	0	0
96-D-103, ATLAS, LANL	15	13	6	0	0	0	0

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	1997	1998	1999	2000	2001	2002	2003
96-D-104, Processing and environmental technology laboratory, SNL	14	0	19	11	0	0	0
96-D-105, Contained firing facility addition, LLNL	17	19	7	0	0	0	0
96-D-111, National ignition facility, LLNL	132	198	284	248	74	65	7
95-D-102, Chemistry and metallurgy research (CMR) upgrades, LANL	15	0	0	0	0	0	0
94-D-102, Nuclear weapons RD&T facilities revitalization, Phase V	8	0	0	0	0	0	0
88-D-106, Nuclear weapons RD&T facilities revitalization, Phase II	3	0	0	0	0	0	0
Future Construction Projects Planning Wedge	0	0	0	16	82	165	208
Total, Construction	224	297	400	391	230	230	215
Total, Stockpile Stewardship	1,660	1,858	2,188	2,211	2,160	2,254	2,295
Stockpile Management							
Operation and Maintenance (O&M)							
Core Stockpile Management	1,384	1,437	1,549	1,437	1,522	1,450	1,491
Enhanced Surveillance	54	46	67	75	70	50	0
Advanced Manufacturing, Design and Production Technologies	57	73	63	90	150	150	150
Radiological/Nuclear Accident Response	80	79	78	78	78	78	78
Tritium Source	150	183	157	145	71	67	69
Materials	110	61	22	22	22	22	22
Total, Stockpile Management O&M	1,835	1,879	1,936	1,847	1,913	1,817	1,810

Total funding for tritium is shown against O&M only for APT/CLWR, construction portion will be identified after a decision is made on the technologies.

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Construction							
99-D-122, Rapid reactivation, VL	0	0	11	16	0	0	0
99-D-123, Replace machanical utility systems, Y-12 Plant	0	0	2	6	0	0	0
99-D-125, Replace boilers & controls, Kansas City Plant	0	0	1	13	0	0	0
99-D-127, Stockpile management restructuring initiative, KC Plant	0	0	14	25	22	31	14
99-D-128, Stockpile management restructuring initiative Pantex consolid	0	0	1	3	13	8	8
99-D-132, Stockpile management restructuring initiative nuc mat S&S	0	0	10	14	15	12	10
98-D-123, Stockpile management restructuring initiative tritium fac, SR	0	11	28	30	17	11	2
98-D-124, Stockpile management restructuring initiative Y-12 consolid	0	6	11	12	11	2	0
98-D-125, Tritium extraction facility (TEF), SR	0	10	TBD	TBD	TBD	TBD	TBD
98-D-126, Accelerator production of tritium (APT), SR	0	68	TBD	TBD	TBD	TBD	TBD
97-D-121, Consolidated pit packaging system, Pantex Plant	1	0	0	0	0	0	0
97-D-122, Nuclear materials storage facility renovation, LANL	4	9	9	0	0	0	0
97-D-123, Structural upgrades, Kansas City Plant	1	0	6	5	5	0	0
97-D-124, Steam plant waste water treatment facility upgrade, Y-12	1	2	0	0	0	0	0

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	1997	1998	1999	2000	2001	2002	2003
96-D-125, Washington aerial measurements operations, Andrews Air Base	4	0	0	0	0	0	0
96-D-123, Retrofit HVAC and chillers for ozone protection, Y-12 Plant	7	3	0	0	0	0	0
96-D-122, Sewage treatment quality upgrade, Pantex Plant	0	7	4	0	0	0	0
95-D-102, Chemistry and metallurgy research (CMR) upgrades, LANL	0	5	16	20	20	17	16
95-D-122, Sanitary sewer upgrade, Y-12 Plant	11	13	0	0	0	0	0
94-D-124, Hydrogen flouride supply system, Y-12 Plant	5	1	0	0	0	0	0
94-D-125, Upgrade life safety, Kansas City Plant	5	2	0	0	0	0	0
94-D-127, Emergency notification system, Pantex Plant	2	0	0	0	0	0	0
93-D-122, Life safety upgrades, Y-12 Plant	7	2	3	0	0	0	0
93-D-123, Non-nuclear reconfiguration, VL	14	0	0	0	0	0	0
92-D-126, Replace emergency notification system, VL	0	3	0	0	0	0	0
88-D-122, Facilities capability assurance program (FCAP), VL	22	19	0	0	0	0	0
88-D-123, Security enhancement, Pantex Plant	10	0	0	0	0	0	0
Future construction project planning wedge	0	0	0	64	94	123	120
Total, Construction	94	162	115	207	197	204	170
Total, Stockpile Management	1,929	2,041	2,051	2,054	2,110	2,021	1,980
Program Direction	325	250	261	235	230	225	225

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	1997	1998	1999	2000	2001	2002	2003
Subtotal BA, Weapons Activities	3,914	4,149	4,500	4,500	4,500	4,500	4,500
Use of prior year balances and other adjustments	(3)	(2)	0	0	0	0	0
Total BA, Weapons Activities	3,911	4,147	4,500	4,500	4,500	4,500	4,500
Operation and Maintenance	3,593	3,688	3,985	3,902	4,073	4,066	4,114
Construction , Advance Appropriation	N/A	N/A	N/A	519	251	146	58
Construction, Other	318	458	515	79	176	288	328

Defense Environmental Restoration and Waste Management (BA):

Site/Project Completion Fund () Denotes FY97 and FY98 comparable amounts

Operation and Maintenance	(928)	(864)	848	829	789	770	811
Construction							
99-D-402, Tank farm support services F&H area, SR	0	0	2	6	8	5	0
99-D-404, Health physics instrumentation laboratory, ID	0	0	1	7	3	1	0
98-D-401, H-tank farm storm water systems upgrade, SR	0	(1)	3	5	0	0	0
98-D-453, Plutonium stabilization and handling systems for PFP, Richland	0	(8)	27	2	0	0	0
98-D-700, INEEL road rehabilitation, INEL	0	(1)	7	3	0	0	0
97-D-450, Actinide packaging and storage facility, SR	(8)	(18)	79	63	19	0	0
97-D-451, B-Plant safety class ventilation upgrades, Richland	(2)	(2)	0	0	0	0	0
97-D-470, Environmental monitoring laboratory, SR	(3)	(6)	7	12	3	0	0
97-D-473, Health physics site support facility, SR	(2)	0	0	0	0	0	0

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	1997	1998	1999	2000	2001	2002	2003
96-D-406, Spent nuclear fuels canister storage & stabilization facility, RL	(61)	(17)	39	6	0	0	0
96-D-408, Waste management upgrades, VL	(5)	(4)	5	0	0	0	0
96-D-461, Electrical distribution upgrade, INEL	(7)	(3)	0	0	0	0	0
96-D-464, Electrical & utility systems upgrade, ICPP, INEL	(10)	(15)	12	12	0	0	0
96-D-471, CFC HVAC/chiller retrofit, SR	(9)	(9)	8	8	11	0	0
95-D-155, Upgrade site road infrastructure, SR	(4)	(3)	0	0	0	0	0
95-D-158, Disassembly basin upgrades, K.L.P., SR	(6)	0	0	0	0	0	0
95-D-456, Security facilities consolidation, ICPP, INEL	(5)	(1)	1	0	0	0	0
94-D-401, Emergency response facility, INEL	(1)	0	0	0	0	0	0
92-D-140, F&H canyon exhaust upgrades, SR	0	0	3	0	0	0	0
92-D-172, Hazardous waste treatment and processing facility, Pantex	0	(5)	0	0	0	0	0
92-D-181, INEL fire and safety improvements, INEL	(1)	0	0	0	0	0	0
86-D-103, Decontamination and waste treatment facility, LLNL	(10)	(11)	5	2	2	0	0
Total, Construction	(132)	(102)	199	126	46	6	0
Total, Site/Project Completion Fund	(1,060)	(966)	1,047	955	835	776	811
Post 2006 Completion Fund () Denotes FY97 and FY98 comparable amount							
Operation and Maintenance	(2,681)	(2,684)	2,592	2,518	2,452	2,421	2,615

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	1997	1998	1999	2000	2001	2002	2003
Construction							
99-D-403, Privatization Phase I infrastructure support, Richland	0	0	15	16	1	0	0
97-D-402, Tank farm restoration and safe operations, Richland	(8)	(14)	23	10	24	34	42
96-D-408, Waste management upgrades, Richland	(8)	(4)	1	0	0	0	0
95-D-402, Install permanent electrical service, WIPP	(1)	(0)	0	0	0	0	0
95-D-405, Industrial landfill V & construction demolition landfill VII, Y-12	(0)	(4)	0	0	0	0	0
95-D-407, 219-S Secondary cocontainment upgrade, Richland	0	(3)	0	0	0	0	0
95-D-408, Phase II liquid effluent treatment and disposal, Richland	(0)	0	0	0	0	0	0
95-E-600, Hazardous waste materials training center, Richland	(8)	0	0	0	0	0	0
95-D-404, Melton Valley storage tank capacity increase, ORNL	(6)	(1)	0	0	0	0	0
94-D-407, Initial tank retrieval systems, Richland	(8)	(15)	33	42	36	31	14
93-D-182, Replacement of cross-site transfer system, Richland	(8)	0	0	0	0	0	0
93-D-187, High-level waste removal from filled waste tanks, SR	(20)	(18)	10	72	72	71	71
89-D-173, Tank farm ventilation upgrade, Richland	(7)	0	0	0	0	0	0
89-D-174, Replacement high level waste evaporator, SR	(12)	(5)	0	0	0	0	0

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	1997	1998	1999	2000	2001	2002	2003
Total, Construction	(85)	(63)	82	140	133	136	127
Total, Post 2006 Completion Fund	(2,766)	(2,747)	2,674	2,658	2,585	2,557	2,742
Science and Technology () Denotes FY97/FY98 comarable amts	(334)	(246)	193	193	193	193	193
Program Direction	411	345	346	350	340	331	321
Environmental Restoration	1,759	1,003	0	0	0	0	0
Closure Projects	15	0	0	0	0	0	0
Waste Management							
Operation and Maintenance	1,493	1,469	0	0	0	0	0
Construction							
98-D-401, H-tank farm storm water systems upgrade, SR	0	1	0	0	0	0	0
97-D-402, Tank farm restoration and safe operations, Richland	8	14	0	0	0	0	0
96-D-408, Waste management upgrades, VL	13	8	0	0	0	0	0
95-D-402, Install permanent electrical service, WIPP	1	0	0	0	0	0	0
95-D-405, Industrial landfill V and const/demo landfill VII, Y-12	0	4	0	0	0	0	0
95-D-407, 219-S Secondary containment upgrade, Richland	0	3	0	0	0	0	0
94-D-404, Melton Valley storage tank capacity increase, ORNL	6	1	0	0	0	0	0
94-D-407, Initial tank retrieval systems, Richland	8	15	0	0	0	0	0
93-D-182, Replacement of cross-site transfer system, Richland	8	0	0	0	0	0	0
93-D-187, High-level waste removal from filled waste tanks, SR	20	18	0	0	0	0	0

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	1997	1998	1999	2000	2001	2002	2003
92-D-172, Hazardous waste treatment and processing facility, Pantex	0	5	0	0	0	0	0
89-D-173, Tank farm ventilation upgrade, Richland	7	0	0	0	0	0	0
89-D-174, Replacement high level evaporator, SR	12	5	0	0	0	0	0
86-D-103, Decontamination and waste treatment facility, LLNL	10	11	0	0	0	0	0
Total, Construction	92	84	0	0	0	0	0
Total, Waste Management	1,585	1,553	0	0	0	0	0
Technology Development	291	220	0	0	0	0	0
Nuclear Material and Facility Stabilization							
Operation and Maintenance	1,181	1,161	0	0	0	0	0
Construction							
98-D-453, Plutonium stabilization and handling system for PFP, Richland	0	8	0	0	0	0	0
98-D-700, INEL road rehabilitation, INEL	0	1	0	0	0	0	0
97-D-450, Actinide packaging and storage facility, SR	7	18	0	0	0	0	0
97-D-451, B-Plant safety class ventilation upgrades, Richland	2	2	0	0	0	0	0
97-D-470, Environmental monitoring laboratory, SR	3	6	0	0	0	0	0
97-D-473, Health physics site support facility, SR	2	0	0	0	0	0	0
96-D-406, Spent nuclear fuels canister storage & stabilization fac, Richland	61	17	0	0	0	0	0
96-D-461, Electrical distribution upgrade, INEL	7	3	0	0	0	0	0

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96-D-464, Electrical & utility systems upgrade ICPP, INEL	10	15	0	0	0	0	0
96-D-471, CFC HVAC/chiller retrofit, SR	9	9	0	0	0	0	0
95-D-600, Hazardous waste materials training center, Richland	8	0	0	0	0	0	0
95-D-155, Upgrade site road infrastructure, SR	4	3	0	0	0	0	0
95-D-158, Disassembly basin upgrades, K.L.P., SR	6	0	0	0	0	0	0
95-D-456, Security facilities consolidation, ICPP, INEL	5	1	0	0	0	0	0
94-D-401, Emergency response facility, INEL	1	0	0	0	0	0	0
92-D-181, INEL fire and life safety improvements	1	0	0	0	0	0	0
Total, Construction	124	81	0	0	0	0	0
Total, Nuclear Material & Facility Stabilization	1,305	1,242	0	0	0	0	0
Policy and Management	23	20	0	0	0	0	0
Environmental Science Program	61	54	0	0	0	0	0
Environmental Management Privatization	170	0	0	0	0	0	0
Defense EM Privatization Initiative (Fixed asset acq)	160	0	0	0	0	0	0
Subtotal BA, Defense Environmental Restoration and Waste Mgmt	5,781	4,437	4,260	4,156	3,953	3,857	4,067
Use of prior year balances and other adjustments	(173)	(7)	0	0	0	0	0
Total BA, Defense Environmental Restoration and Waste Mgmt	5,608	4,429	4,260	4,156	3,953	3,857	4,067
<u>Defense Facilities Closure Projects (BA):</u>							
Closure Projects	(15)	891	1,006	1,000	970	920	920

() Denotes FY97 and FY98 comparable amounts

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	1997	1998	1999	2000	2001	2002	2003
<u>Defense Environmental Management Privatization (BA)</u>							
Privatization Initiatives, Various Locations	(330)	200	517	298	159	500	500
<u>Other Defense Activities (BA):</u>							
Nonproliferation and National Security							
Verification and Control Technology							
Nonproliferation and Verification R&D	207	210	210	213	214	214	214
Arms Control	216	234	257	210	187	155	155
Intelligence	34	34	34	35	36	36	36
Total, Verification and Control Technology	457	478	501	458	437	405	405
Nuclear Safeguards and Security	47	47	53	57	59	59	59
Security Investigations	20	30	30	30	30	30	30
Offsets from user programs	0	0	(20)	(20)	(20)	(20)	(20)
Total, Security Investigations	20	30	10	10	10	10	10
Emergency Management	17	20	24	25	26	26	26
Program Direction - NN	88	83	89	89	90	90	90
Total, Nonproliferation and National Security	629	658	676	639	622	590	590
Worker and Community Transition							
Worker and Community Transition	58	58	41	26	16	0	0
Program Direction - WT	5	4	4	4	4	0	0
Total, Worker and Community Transition	63	61	45	30	20	0	0
Fissile Materials Control and Disposition							
Fissile Materials Control and Disposition							
Operation and Maintenance	83	99	111	102	85	83	87
Construction							
99-D-141, Pit disassembly and conversion facility, VL	0	0	25	49	98	93	54
Advance Appropriation - design only	N/A	N/A	N/A	22	0	0	0
Other Construction	0	0	25	26	98	93	54

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99-D-143, Mixed oxide (MOX) fuel fabrication facility, VL	0	0	28	22	0	34	119
Advance Appropriation - design only	N/A	N/A	N/A	22	0	0	0
Other Construction	0	0	28	0	0	34	119
00-D-142, Immobilization and associated processing facility, TBD	0	0	0	22	22	36	117
97-D-140, Consolidated special nuclear materials storage plant, TBD	17	0	0	0	0	0	0
Program Direction - MD	17	0	53	93	120	162	290
Program Direction - EH	4	4	5	5	5	5	6
Total, Fissile Materials Control and Disposition	104	104	169	200	210	250	383
Environment, Safety and Health							
Office of Environment, Safety and Health (defense)	68	74	69	89	89	89	89
Program Direction -EH)	11	20	5	5	5	5	5
Total, Environment, Safety and Health	79	94	74	94	94	94	94
Office of Hearings and Appeals	0	2	2	3	3	3	3
Nuclear Energy							
Nuclear Technology Research and Development	0	12	0	0	0	0	0
International Nuclear Safety	81	35	35	35	35	35	35
Nuclear Security	4	0	0	0	0	0	0
Total, Nuclear Energy	85	47	35	35	35	35	35
Independent Assessment of DOE Projects	0	35	0	0	0	0	0
Naval Reactors							
Naval Reactors Development							
Operation and Maintenance	649	636	633	622	606	593	606
Construction							
98-D-200, Site laboratory/facility upgrade, VL	0	6	7	3	0	0	0
97-D-201, Advanced test reactor secondary coolant system refurb, INEL	0	5	0	0	0	0	0

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95-D-200, Laboratory systems and hot cell upgrades, VL	5	1	0	0	0	0	0
95-D-201, Advanced test reactor radioactive waste system upgds, INEL	1	0	0	0	0	0	0
90-N-102, Expended core facility dry cell proj, Naval React Fac, ID	8	3	6	10	13	5	0
	14	15	13	13	13	5	0
Total, Naval Reactors Development	663	651	646	635	619	598	606
Program Direction - Navy	19	20	20	21	22	23	24
Total, Naval Reactors	682	671	666	656	641	621	630
Subtotal BA, Other Defense Activities	1,641	1,672	1,667	1,657	1,625	1,593	1,735
Use of prior year balances and other adjustments	(4)	(6)	0	0	0	0	0
Total BA, Other Defense Activities	1,637	1,666	1,667	1,657	1,625	1,593	1,735
Operation and Maintenance	1,606	1,651	1,601	1,551	1,492	1,426	1,445
Construction (Advance Appropriation)	N/A	N/A	N/A	58	13	5	0
Construction - Other	31	15	66	48	120	162	290
Defense Nuclear Waste Disposal (BA)							
Defense Nuclear Waste Disposal	200	190	190	190	190	190	190
Total BA, Atomic Energy Defense Activities	11,356	11,523	12,140	11,801	11,397	11,560	11,912

This plan is in fulfillment of the National Defense Authorization Act for Fiscal Year 1997 (section 3155 of Public Law 104-201) that directs the Secretary of Energy to annually prepare a five-year budget for the national security programs.

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
DEFENSE PROGRAMS
(Tabular dollars in thousands; Narrative in whole dollars)

WEAPONS ACTIVITIES
EXECUTIVE BUDGET SUMMARY

VISION

High confidence in the safety, security, reliability and performance of the Nation's enduring nuclear weapon stockpile under a comprehensive test ban, utilizing a science-based approach to stockpile stewardship within a smaller, more efficient and cost effective weapons complex infrastructure.

MISSION

The mission of Defense Programs is:

- to maintain indefinitely the safety, reliability and performance of the current nuclear weapons stockpile without nuclear testing;
- to maintain the capability to return to the design and production of new weapons and to underground nuclear testing, if so directed by the President; and,
- to dismantle excess weapons safely, and dispose of or store excess components.

STRATEGY

Rely on scientific understanding and expert judgement, rather than on nuclear testing and the development of new weapons, to predict, identify and correct problems affecting the safety, reliability or performance of the enduring stockpile. Develop and enhance surveillance capabilities for predicting and detecting problems. Carry out assessment and certification activities, analyzing and evaluating the effects of changes on warhead safety and performance. Develop advanced design and manufacturing capabilities necessary to refurbish stockpile warheads and certify new parts, materials and processes for the future. Retire and dismantle weapons as needed to meet arms control objectives. As new tools are developed and validated, incorporate them into a smaller, environmentally-sound, more flexible and agile weapons complex infrastructure for the future.

POLICY FRAMEWORK

In the early 1990's, as part of its continuing world leadership role in the arms control arena, the U.S. halted production of new nuclear warheads and conducted its last nuclear explosive test. Thus ended an era in which the U.S. modernized its nuclear weapon stockpile by continually replacing aging systems with new systems and in which nuclear testing served as the ultimate arbiter of the safety, reliability and performance of the Nation's nuclear weapon stockpile. With the decision to cease production of new nuclear warheads and end nuclear testing, the Nation faced the challenge of maintaining its existing nuclear weapon stockpile with other tools and different kinds of tests for the foreseeable future. In 1993 and 1994, the President and the Congress directed the Secretary of Energy to establish a stockpile stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons.

In September 1994, the President approved the Nuclear Posture Review, which established requirements for the Department of Energy related to maintaining nuclear weapons infrastructure and capabilities, and ensuring tritium availability. The requirements for DOE were stated in terms of "infrastructure to support U.S. nuclear forces," delineated specifically as follows: maintain nuclear weapon capability (without underground nuclear testing); develop a stockpile surveillance engineering base; demonstrate the capability to design, fabricate and certify weapon types in the enduring stockpile; maintain the capability to design, fabricate, and certify new warheads; and ensure tritium availability. No production of new-design nuclear warheads is required. To meet these requirements, the Department of Energy developed the Stockpile Stewardship and Management Program. The strategies and key components of this approach were articulated initially in the May 1995 DOE report, *The Stockpile Stewardship and Management Program: Maintaining Confidence in the Safety and Reliability of the Enduring U.S. Nuclear Weapon Stockpile*.

In August 1995, the President announced that the United States would pursue a zero yield Comprehensive Test Ban Treaty (CTBT) as a means of reducing the danger posed by nuclear weapons proliferation. In September 1996, the United Nations General Assembly voted nearly unanimously to endorse the CTBT negotiated at the Geneva-based Conference on Disarmament. President Clinton signed the treaty on September 24, 1996, and submitted it to the Senate for ratification on September 23, 1997. One of the six safeguards that defines the United States' participation in the CTBT is the conduct of a stockpile stewardship program to ensure the safety and reliability of the weapons remaining in the nation's nuclear stockpile. In addition, the President requested a new annual certification process to certify that the stockpile is safe and reliable in the absence of underground nuclear testing, and to produce a statement about future confidence in the safety and reliability of the stockpile.

In January 1996, the Senate gave overwhelming approval to the START II Treaty; however, the Russian Duma has not ratified START II. The U.S. Senate's treaty ratification text highlighted the Nation's commitment to proceed with a robust stockpile stewardship program, to reestablish and maintain sufficient production capabilities and capacities, to maintain the U.S. nuclear weapons laboratories and the core competencies therein, to ensure rapid access to a new production source for tritium within the next decade, and to maintain the Nevada Test Site at a level which would enable timely resumption of underground nuclear testing if directed by the President.

In April 1996, the Secretary of Energy submitted to the Congress the first Stockpile Stewardship and Management Plan. The Plan is a roadmap of program activities needed to accomplish stockpile stewardship and management program goals. The document's first update was completed and sent to the Congress on October 28, 1997, and formed the basis for FY 1999 budget formulation. The next update is planned to be available on March 15, 1998. Defense Programs also issued a summary progress report on the program, *Stockpile Stewardship Program; Overview and Progress*, in October 1997.

The Department completed work on the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (SSM/PEIS) in late 1996. On December 19, 1996, the Secretary of Energy signed the Record of Decision, enabling the DOE to proceed to construction on several key new experimental facilities, reestablish a limited pit manufacturing capability, and begin facility downsizing in FY 1998 where needed in accordance with anticipated future workload levels.

On June 18, 1997, the President signed the implementing Presidential Decision Directive (PDD) for the Fiscal Year 1997-2002 Nuclear Weapons Stockpile Memorandum. The President has declared United States nuclear forces will maintain flexibility to both "hedge" against foreign political reversals (START I) as well as to "lead" through further reductions (START II). This strategy has been recognized in developing the programs and associated budget to meet these goals. This strategy is also supported in the Department's plans to transition the nuclear weapons complex from capacity-based to capability-based, while providing flexibility to support changing stockpile sizes.

PROGRAM OVERVIEW

Defense Programs carries out a single, highly integrated technical program for maintaining the safety and reliability of the U. S. nuclear stockpile that has evolved in response to these many new policies. The program's overall goal is encompassed in the DOE Strategic Plan National Security strategic goal:

Support national security, promote international nuclear safety, and reduce global nuclear danger from weapons of mass destruction.

This strategic goal for Defense Programs is expressed in the following terms:

- Provide high confidence in the safety, security, reliability and performance of the enduring U.S. stockpile, without nuclear testing, to ensure the effectiveness of the U.S. nuclear deterrent while simultaneously supporting U.S. arms control and nonproliferation objectives.
- Provide the ability to resume U.S. underground nuclear testing and reconstitute nuclear weapons production capacities, consistent with Presidential

Weapons Activities - EXECUTIVE BUDGET SUMMARY

directives, the Nuclear Posture Review, and the START II treaty, should national security so demand in the future.

There are four national security objectives from the DOE Strategic Plan upon which this program and budget are based:

- Maintain confidence in the safety, reliability and performance of the nuclear weapon stockpile without nuclear testing.
- Replace nuclear testing with a science-based stockpile stewardship and management program.
- Ensure the vitality of DOE's national security enterprise.
- Reduce nuclear weapon stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

For purposes of budget formulation, budget execution, and accounting, DP activities are funded by three decision units: Stockpile Stewardship, Stockpile Management, and Program Direction. As discussed in this document, they are referred to as the "Stockpile Stewardship and Management Program." However, as a result of the program's ongoing evolution, it is becoming apparent that significant budget structure changes may be warranted and desirable starting in FY 2000. At a minimum, changing the account title to "Stockpile Stewardship" from "Weapons Activities" will better reflect the program's mission in the post-Cold War era. Other account title changes to stress scientific and experimental integration in the laboratories and surveillance, manufacturing and operations in the plants are contemplated. Continuing our fundamental examination of all program activities in the FY 2000 budget cycle may reveal other opportunities to streamline the budget accounts, particularly with regard to changes that may be desirable to further DP's successful implementation of the Government Performance and Results Act (GPRA). It is also likely that realignment of functions between these program accounts will be appropriate.

As a result of the refinements of the program that have taken place over the past few years, requirements for the Stockpile Stewardship and Management Program are better defined, technical challenges are better understood, and cost estimates are more mature. The program activities are seamless and continual. Assessment and certification pervade all activities, from surveillance through manufacturing. Likewise, computational modeling and prediction are integral to every activity, from the assessments of aging-related changes to the design and certification of replacement components, to projections of stockpile life extension.

Not only are the laboratories and plants working closely together, particularly for surveillance, manufacturing, computer simulation and modeling, but the activities under each program are tightly connected. High performance networks linking the advanced computers, coupled with enhanced visualization and other tools, are essential elements of this effective integration. In addition, the laboratories and plants work closely with the Department of Defense to make sure that the enduring U.S. nuclear stockpile meets national security requirements.

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The Stockpile Stewardship activities address issues of maintaining confidence in stockpile safety and reliability without nuclear testing through a technically challenging science-based stockpile stewardship program utilizing upgraded or new experimental, computational and simulation capabilities. The programs are planned to meet the infrastructure requirements contained in the Nuclear Posture Review, and continue with major initiatives in high energy density research with lasers and accelerated research and development in advanced computations to acquire and use data to improve predictive capabilities which will be the foundation of the science-based stewardship approach. The Accelerated Strategic Computing Initiative (ASCI), a discrete element within the Stockpile Stewardship decision unit, provides the leading-edge, high end simulation capabilities needed to meet weapon assessment and certification requirements without nuclear testing. To accomplish this, ASCI integrates the resources of the national laboratories, computer industry, and academia. Major new experimental facilities are also planned to expand and enhance the scientific and engineering base for stockpile stewardship, and to assure that DP can continue to attract and retain the high quality personnel needed to make the scientific and technical judgements related to the safety and reliability of the stockpile in the absence of nuclear testing.

The Stockpile Management activities continue historical responsibilities to provide near-term and long-range support for the enduring stockpile, and to ensure an adequate supply of tritium. Along with stockpile surveillance, this includes normal maintenance, corrective maintenance and system refurbishment, as well as weapon dismantlement. The Stockpile Management decision unit funds initiatives in enhanced surveillance and advanced manufacturing, as well as the Stockpile Management Restructuring Initiative projects to downsize and modernize production capabilities needed for the future. The activities are supportive of the infrastructure requirements cited in the Nuclear Posture Review. The DOE also has completed a PEIS for tritium production, and has pursued a dual-track approach to research, development and engineering needed to enable a decision in 1998 to select a primary and backup production method.

Weapons Program Direction funds all federal personnel related costs, as well as support and contractual services for Federal employees. Other support costs are also included through FY 1999, such as Community Assistance payments for the northern New Mexico educational endowment and research and development support for crosscutting environmental, safety and health activities.

Some program activities are funded jointly between the Stockpile Stewardship and Stockpile Management decision units, reflecting both congressional direction and recognition of the historical location of laboratory and plant funding. For example, in FY 1997, support for the laboratories' major role in research base support of the Enhanced Surveillance initiative was directed to be funded in Stockpile Stewardship, while the plant and some additional laboratory activities in Enhanced Surveillance were funded within Stockpile Management. The Stewardship and Management programs also share responsibilities in advanced manufacturing and systems engineering studies to integrate technological drivers such as advanced computing into an efficient and effective production complex of the future. The Dual Revalidation program will encompass both laboratories and plants in a new joint process for validating the safety, reliability and performance of the stockpile over time, and is funded by many Stockpile Stewardship activities. Finally, the Radiological/Nuclear Accident Response program, funded by Stockpile Management, utilizes capabilities throughout the weapons complex, including weapons expertise at the laboratories and specialized capabilities resident at the DOE facilities in Nevada.

Weapons Activities - EXECUTIVE BUDGET SUMMARY

Maintaining the U.S. nuclear weapon stockpile in this new era will continue to challenge our best capabilities. The Stockpile Stewardship and Management programs must be implemented promptly and fully. In particular, new facilities and capabilities must be developed and validated while personnel with nuclear-test experience are still available. Despite the wide-ranging challenges and risks, we are confident that this program provides the framework and capabilities for success.

TABLE 1
WEAPONS ACTIVITIES ACCOUNT SUMMARY
(Budget Authority in Thousands)

WEAPONS ACTIVITIES	FY 1997 Enacted	FY 1997 Adjusted	FY 1998 Budget Request	FY 1998 Adjusted	FY 1999 Budget Request
Operations and Maintenance	3,596,600	3,596,600	3,576,255	3,691,805	3,984,935
Construction	314,598	318,043	468,195	457,495	515,065
<i>Adjustments/Use of Prior Year Balances</i>	--	(3,445)	--	(2,608)	--
Total Weapons Activities (New Obligational) Authority	3,911,198	3,911,198	4,044,450	4,146,692	4,500,000
<i>Defense Asset Acquisition Account</i>	--	--	1,034,200	0	--
Total Weapons Activities Budget Authority	3,911,198	3,911,198	5,078,650	4,146,692	4,500,000

The Congress did not support the Department's proposal in FY 1998 to establish Defense Asset Acquisition accounts. As such, this budget requests construction funding within the Weapons Activities appropriation, as in the past, although "advance appropriations" for the outyears are requested. The FY 1998 appropriation provided a 2.5 percent increase over the request, and 6 percent over the FY 1997 comparable level. The FY 1998 adjustment is the directed use of \$2.6 million in prior year unobligated balances to offset the need for new obligational authority. The FY 1999 Congressional Budget Request is 8.5 percent above the FY 1998 appropriations; a 7.9 percent increase in Operations and Maintenance (O&M) and a 12.6 percent increase in Construction. The increase in O&M is driven primarily by planned growth in the Accelerated Strategic Computing Initiative/Stockpile Computing and Core Stockpile Management activities. The construction funding increase is attributable to the National Ignition Facility; FY 1999 is the peak year for scheduled construction funding for this facility.

Weapons Activities - EXECUTIVE BUDGET SUMMARY

TABLE 2
DECISION UNIT SUMMARY
(Budget Authority in Thousands)

WEAPONS ACTIVITIES	FY 1997 Appropriation	FY 1997 Adjusted	FY 1998 Budget Request	FY 1998 Adjusted	FY 1999 Budget Request
Stockpile Stewardship	1,656,767	1,660,167	1,740,900	1,858,213	2,188,375
Stockpile Management	1,928,831	1,928,876	2,000,050	2,041,087	2,051,125
Program Direction	325,600	325,600	303,500	250,000	260,500
Subtotal	3,911,198	3,914,643	4,044,450	4,149,300	4,500,000
<i>Adjustments, Use of Prior Year Balances</i>	0	(3,445)	0	(2,608)	0
Total, Weapons Activities Budget Authority	3,911,198	3,911,198	4,044,450	4,146,692	4,500,000
<i>Federal Staff</i>	1,992	1,951 (EOY)	1,925	1,891	1,875

The funding for Weapons Activities decision units shown in Table 2 reflects the FY 1997 appropriation as enacted, and FY 1997 through FY 1999 figures comparable to the FY 1999 account structure. Operating and Maintenance and Construction budget authority are included in each decision unit.

The FY 1999 request for budget authority for Defense Programs is increased by 8.5 percent over the FY 1998 appropriation. The Stockpile Stewardship programs have the largest increase, \$330.2 million or 17.8 percent, driven by the Accelerated Strategic Computing Initiative, the construction funding schedule for the National Ignition Facility project, and funding associated with the waste management activities at the Los Alamos and Sandia National Laboratories which is transferred from the Environmental Management program beginning in FY 1999. The Stockpile Management decision unit funding is essentially level. Program increases of about 5 percent are offset by a \$100 million decrease in funding associated with the post-1998 funding strategy for the Tritium source and to the transfer of funding associated with Materials Surveillance responsibilities at former Defense programs sites to the Environmental Management program. The apparent FY 1999 funding increase indicated for Program Direction

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is attributable to an artificially low FY 1998 figure resulting from the application of prior year unobligated balances to offset new FY 1998 appropriations. The FY 1999 request for Program Direction is 3.5 percent below the comparable FY 1998 level, and 20 percent below the FY 1997 level.

CHANGES FROM FY 1998

Stockpile Stewardship This decision unit includes Core Stockpile Stewardship, Inertial Confinement Fusion and Technology Partnerships and Education.

Core Stockpile Stewardship Fiscal Year 1998 appropriations for Core Stockpile Stewardship were increased by \$110 million over the requested level. Specific guidance was provided for the increase, including \$45 million for core research and development activities, \$15 million for radiation hardened microchip activities, \$20 million for nuclear test readiness, and \$30 million for infrastructure at the laboratories and the Nevada Test Site. The FY 1999 request for Core Stewardship activities increases by \$97.8 million, of which \$61.9 million is for waste management activities at Los Alamos and Sandia National Laboratories, and \$14.9 million is for construction. Six new projects are initiated in FY 1999. Four of these address infrastructure: at Lawrence Livermore, Phase II of the planned roof reconstruction and rehabilitation of the maintenance facility; at Los Alamos, consolidation of existing health physics functions into one location; and, at the Nevada Test Site, renovation of Mercury Highway. Two new programmatic projects are supported: at Sandia National Laboratories, Albuquerque, a project to provide a modern communications infrastructure and control facility linking 11 full-scale environmental test capabilities; and, at Lawrence Livermore National Laboratory, rehabilitation of the nuclear chemistry facilities. **Accelerated Strategic Computing Initiative and Stockpile Computing:** The FY 1998 appropriations for the Accelerated Strategic Computing Initiative (ASCI) were increased by \$20 million over the requested level, to a total of \$222.6 million for ASCI and \$151.5 million for Stockpile Computations. The increase from this level to the FY 1999 request is \$142 million, about 38 percent (\$329.1 million for ASCI and \$186.9 for Stockpile Computing). This increase will be used to augment efforts at the three laboratories in the Advanced Applications and Problem Solving Environment strategies as well as increased Platform, Alliances and One Program/Three Labs strategies funding. In FY 1999, the ASCI program will increase efforts in 3-D code validations; improve tri-lab and industrial collaborations; and continue the Academic Strategic Alliances Program with selected universities as announced by the Secretary of Energy on July 31, 1997. New efforts and initiatives to be undertaken in FY 1999 include: Distributed Computing at a Distance and the Validation and Verification initiative--the tools, data and methodologies to ensure high-end simulation capabilities reflect and predict the real world. In addition, a new line item is requested in FY 1999, the Joint Computational Engineering Laboratory, to provide a state-of-the-art facility at Sandia National Laboratories for research, development and application of leading edge, high end computational and communications technologies.

Inertial Confinement Fusion The FY 1998 appropriations for the inertial confinement fusion operating and maintenance base program, and the National Ignition Facility (NIF) project, were provided as requested. The FY 1999 budget is increased by \$86.4 million, \$61.9 million of which is due to the peak year of construction funding for NIF. NIF other project costs decrease by \$24.5 million in FY 1999 as optics facilitization activities near

Weapons Activities - EXECUTIVE BUDGET SUMMARY

completion; however, the ICF base program includes increased funding of \$22.6 million to support NIF optics pilot production, a backlighter for Z, and increased support for weapons physics shots on Omega.

Technology Partnerships/Education The FY 1998 appropriations for Technology Partnerships were reduced \$4.1 million from the request, with no funding provided for the Partnership for a New Generation of Vehicles. FY 1999 funding for Technology Partnerships and Education increases \$4.2 million over the FY 1998 appropriation and maintains the FY 1998 level of effort.

Stockpile Management This decision unit includes Core Stockpile Management, Enhanced Surveillance, Advanced Manufacturing, Design and Production Technologies, Radiological/Nuclear Accident Response, Tritium and Materials.

Core Stockpile Management In FY 1998, a net increase of \$47.1 million was appropriated over the FY 1998 request. There were directed increases of \$95.5 million within this total, specifically: \$35 million for workload associated with the W87 warhead; \$7.5 million for an environmental surety program; \$45 million for infrastructure and modernization; and \$8 million for a tritium facility upgrade. The net change is the result of an offsetting decrease of \$45.2 million resulting from the transfer of Materials Surveillance mission responsibility to the Assistant Secretary for Environmental Management for the Rocky Flats and Fernald facilities, and a reduction to the construction project for the Chemistry and Materials Research Building at Los Alamos.

The FY 1999 request for Core Stockpile Management activities increases by \$112 million for operations and maintenance and by \$32 million for construction. These increases will permit expansion of the Stockpile Management Restructuring Initiative (SMRI) initiated in FY 1998 at two plants, to four plants in FY 1999. We will also continue activities to reestablish pit production capacity and improve plutonium handling infrastructure at Los Alamos National Laboratory. The increase will also support additional production plant maintenance and modernization, and expand production capacity for limited life components at the START I level.

Enhanced Surveillance Fiscal Year 1998 appropriations were increased \$7.5 million over the request. The FY 1999 request increases \$21.2 million above this level to support tests for precision performance, standards and divergence in high explosives, advanced surveillance hydrodynamic tests, new radiography, gas analysis, and endoscopy diagnostics; advanced flight test hardware, plutonium and uranium stability and performance tests, materials surveillance tests and models, and systems surveillance tools and models.

Advanced Manufacturing, Design and Production Technologies Fiscal Year 1998 appropriations for these activities were increased by \$5 million for joint development of manufacturing technologies with the laboratories. The apparent decrease in the FY 1999 request of \$10.7 million results from the effect of this one-time addition in FY 1998. The FY 1999 request is sufficient to continue activities according to the program plan.

Radiological/Nuclear Accident Response These programs were appropriated as requested in FY 1998. The FY 1999 request includes increased

Weapons Activities - EXECUTIVE BUDGET SUMMARY

funding for training of first responders to weapons of mass destruction incidents as well as additional funding for start-up and equipment for rapid response in the National Capital Area. The funding request is \$1.2 million below the FY 1998 level.

Tritium Fiscal Year 1998 appropriations were provided as requested. The FY 1999 request for Tritium decreases by \$103.8 million from the FY 1998 appropriation, reflecting a change in funding strategy associated with the 1998 decision on the primary and backup technologies.

Materials The FY 1998 appropriations act transferred responsibilities for materials surveillance activities at Rocky Flats and Fernald to Environmental Management to streamline management at these sites. The FY 1999 request is \$39.5 million below the FY 1998 level reflecting similar transfers of these responsibilities for other Environmental Management sites: Savannah River Site, Idaho Chemical Processing Plant, and the Hanford Site.

Program Direction

The FY 1998 appropriations act reduced this decision unit by 18 percent below the budget request, to \$250 million. The effect of this action will be to accelerate the downsizing and reengineering recommended in 1997 by the Congressionally mandated 120 Day Study. The apparent \$10.5 million increase in the FY 1999 budget request is the result of the transfer from Environmental Management of funding and 18 FTE's associated with waste management activities at the Albuquerque Operations Office sites, and the directed use of unobligated balances to offset new FY 1998 appropriations. The FY 1999 request of \$260.5 million is 3.5 percent below the comparable FY 1998 level.

STRATEGIC ALIGNMENT INITIATIVE

Defense Programs will reach its FY 1998 Strategic Alignment Initiative (SAI) staffing level of 1,895 by the end of January 1998. Onboard staffing for Defense Programs at the time of transmission of the 120-Day Study to the Congress in June 1997 was 1,992. Of the approximately 100 separations required to meet the FY1998 SAI staffing level, Headquarters provided about 50, including 15 involuntary separations in early January 1998. The field achieved its share of 50 separations through voluntary actions; involuntary actions are not expected in the field during FY 1998. Defense Programs FY 1999 SAI staffing level is 1,878 (adjusted to reflect the transfer in of 18 FTE's from Environmental Management) which is expected to be achievable by the end of FY 1999 through normal attrition.

TABLE 3
FIVE YEAR BUDGET PLAN SUMMARY
(Budget Authority in Thousands)

WEAPONS ACTIVITIES	FY 1997 Adjusted	FY 1998 Adjusted	FY 1999 Request	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate
Stockpile Stewardship							
Core Stockpile Stewardship	917,547	1,005,825	1,103,575	1,091,530	1,108,440	1,142,855	1,212,370
ASCI and Stockpile Computing	306,760	374,089	517,800	629,100	681,000	734,700	753,800
Inertial Confinement Fusion	175,360	184,354	207,000	193,300	255,600	270,900	281,700
National Ignition Facility	191,100	229,100	291,000	258,100	75,900	66,400	8,100
Technology Partnerships	59,400	55,901	60,000	30,000	30,000	30,000	30,000
Education	10,000	8,944	9,000	9,000	9,000	9,000	9,000
Total, Stockpile Stewardship	1,660,167	1,858,213	2,188,375	2,211,030	2,159,940	2,253,855	2,294,970
Stockpile Management							
Core Stockpile Management	1,478,081	1,520,675	1,664,707	1,644,355	1,719,425	1,654,490	1,661,360
Enhanced Surveillance	53,762	46,060	67,307	75,000	70,000	50,000	0
ADaPT	57,588	73,272	62,600	90,000	150,000	150,000	150,000
Radiological/Nuclear Accident Response	79,625	78,808	77,600	77,600	77,600	77,600	77,600
Tritium Source	150,000	260,855	157,000	145,000	71,000	67,000	69,000
Materials	109,820	61,417	21,911	21,910	21,910	21,910	21,910
Total, Stockpile Management	1,928,876	2,041,087	2,051,125	2,053,865	2,109,935	2,021,000	1,979,870
Program Direction	325,600	250,000	260,500	235,105	230,125	225,145	225,160
TOTAL WEAPONS ACTIVITIES (TOA)	3,914,643	4,149,300	4,500,000	4,500,000	4,500,000	4,500,000	4,500,000
<i>Adjustments</i>	<i>(3,445)</i>	<i>(2,608)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>TOTAL WEAPONS ACTIVITIES (NOA)</i>	<i>3,911,198</i>	<i>4,146,692</i>	<i>4,500,000</i>	<i>4,500,000</i>	<i>4,500,000</i>	<i>4,500,000</i>	<i>5e+06</i>

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The Five Year Budget Plan estimates of \$4.5 billion annually for FY 1999 through FY 2003 are consistent with guidance from the National Security Council. Precise funding requirements for FY 2000 through FY 2003 will be refined in conjunction with the appropriate fiscal year budget cycle and guided by policy and workload documents at the time. The overall level of \$4.5 billion throughout the period recognizes the technically challenging workload in the stockpile stewardship and management plan, as well as the need to provide for major new experimental facilities while significantly downsizing capacity in some older facilities that were geared for a larger stockpile and the large production quantities of the past.

The five year planning budget estimates for Core Stockpile Stewardship activities provide an average growth of about 3 percent annually for operations and maintenance. Construction funding is included to complete the second axis of the Dual Axis Radiographic Hydrodynamic Test Facility. An advanced hydrotest facility and an advanced pulsed power research facility are being considered for new construction starts within the five year funding profile. The Accelerated Strategic Computing Initiative continues to grow throughout the five year period consistent with aggressive program plans through 2004. The five year budget plan includes construction funding to complete the National Ignition Facility, and commensurate funding increases in the Inertial Confinement Fusion Operations and Maintenance program to fully utilize this advanced experimentation facility.

Funding for Core Stockpile Management activities declines about 4 percent by the end of the five year period. This reflects the completion of the Stockpile Management Restructuring Initiative construction projects to downsize the capacity of the former weapons production sites consistent with the recommendations of the Programmatic Environmental Impact Statement. Simultaneously with the physical downsizing, funding for advanced manufacturing, design and production technology nearly triples during the five year period to develop and integrate new technology into the remaining stockpile surveillance, manufacturing and operations facilities. Funding is also included for activities to reestablish pit manufacturing capability in the complex. The Enhanced Surveillance Program concludes during the five year period, with the last year of funding projected to be 2002.

The Five Year Plan includes sufficient funding to meet current requirements for tritium production, if the Department selects the purchase of irradiation services from commercial light water reactors as the primary option. If the Department selects accelerator production of tritium as the primary option, it will need to seek relief from the current target date for initiating new tritium production or seek additional funding.

The five year planning funding estimate for Weapons Program Direction declines by 12 percent at the end of the five year period.

FY 1999 ISSUES

Memorandum of Agreement between Defense Programs and Environmental Management (EM):

At the time of writing the budget, a Memorandum of Agreement between Environmental Management and Defense Programs was in coordination to formalize transfers of mission responsibility between the two offices. No funding was transferred between the two offices because the agreement was constructed such that the cost estimate for workload in each office was estimated at \$79.2 million, offsetting the need for any transfer of budget authority.

Transfer of responsibility for Waste Management activities from EM to DP

In FY 1998, the Department implemented a pilot program to re-engineer waste management activities at a limited number of sites at which the responsibility for programs managing newly generated waste was transferred from the EM to the generating program. Defense Programs assumed responsibility for management of waste generated by its programs at two sites, the Kansas City and Savannah River Plants, in the FY 1998 budget, and will retain these responsibilities in FY 1999. For FY 1999, DP and EM have agreed to further streamline the waste management function at three additional sites where DP is the landlord. Responsibility is transferred from EM to DP for management of newly generated waste as well as for certain previously generated wastes at the Los Alamos and Sandia National Laboratories, and the Pantex Plant. This action is expected to result in more efficient waste management at these sites by making the generator responsible for the costs of treating, storing and disposing waste. The Program Direction account and the Strategic Alignment Initiative staffing target have been increased by 18 Federal FTE's located at the Albuquerque Operations Office who have been transferred from EM to assist with management of the program.

Transfer of Materials Surveillance responsibilities from DP to EM

The FY 1998 appropriations act required transfer of materials surveillance mission and responsibility for the Rocky Flats Environmental Technology Site and the Fernald Environmental Management Project to EM in FY 1998. For FY 1999, DP and EM have agreed to maintain this transfer of responsibility and to realign materials surveillance responsibilities at three additional sites where EM is the landlord -- Idaho Chemical Processing Plant, Hanford Site, and the Savannah River Site. Responsibility is transferred from DP to EM for management of excess materials including all activities associated with the storage, surveillance and safeguards and security of all excess nuclear materials at the five sites. The facilities where these materials are stored, as well as other excess materials and waste, were transferred from DP to EM under prior agreements. This action streamlines management of excess nuclear materials at the subject sites by consolidating the funding and management responsibility under a single program, consistent with the reasoning of the Congress in the FY 1998 legislation. The Stockpile Management Operations and Maintenance budget includes \$21.9 million in FY 1999 and the outyears for processing of Highly Enriched Uranium scrap and for safe and secure storage of materials at Oak Ridge National Laboratory.

Surplus Facilities

There is an ongoing issue regarding organizational responsibility for surplus facilities and materials not required to carry out the DP mission. The Office of Environmental Management's (EM) current 10-year planning does not provide funding estimates for surplus facilities and materials that are not already included in the EM program. DP estimates that the list of affected facilities could grow from about 600 facilities now to about 1,000 in the next few years. Beyond current expenditures to assure worker and public safety, DP has not planned or budgeted for disposition of these surplus facilities and materials. A proposal, including transfer criteria, to reopen this pipeline by FY 2002 is under consideration in the Department; EM remains reluctant to pursue options to reopen the transfers before 2002. Defense Programs is continuing to pursue earlier transfer in order to facilitate its mission. At present, the EM plan and policy leaves this major responsibility unplanned, unbudgeted and unmanaged.

Security Clearances

The Department has recently directed that beginning in FY 1999, the responsibility and funding for management and operating (M&O) contractor security clearances in the field will be transferred to the program offices. This change is intended to regulate the need and levels of clearances to perform mission work by making clearances a direct cost of doing business. The FY 1999 DP budget provides about \$13 million for this purpose. Defense Programs is currently reexamining and updating as appropriate its requirements for clearances for M&O contractors in the field to be ready to assume this new responsibility on October 1, 1998.

Firefighters at Los Alamos National Laboratory

Through FY 1998, Defense Programs direct funded the contract with the County of Los Alamos to provide fire protection services to the Los Alamos National Laboratory. Consistent with the practice at other DOE sites and with the principle of full cost recovery, starting in FY 1999 this annual cost of about \$10.5 million will be funded through the laboratory's indirect pool, rather than by direct Program Direction appropriations.

PROGRAM PERFORMANCE MEASURES

The Strategic Objectives, Strategies and Performance Measures from the September 1997, Department of Energy Strategic Plan are the basis for this budget request. The following four national security strategic objectives will be accomplished as a result of carrying out the supporting activities detailed in this budget justification.

- NS-1 Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.
- NS-2 Replace nuclear testing with a science-based Stockpile Stewardship and Management Program.
- NS-3 Ensure the vitality of DOE's national security enterprise.
- NS-4 Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

Success in FY 1999 will be measured in the Performance Agreement with the Secretary, which is expected to encompass performance measures in this document, as well as measures in supporting Defense Programs program planning and execution documents.

A summary of the FY 1998 Performance Agreement and the final status report on the FY 1997 Performance Agreement are included in Appendix B.

Victor H. Reis
Assistant Secretary for Defense Programs

Date

SUMMARY OF FY 1999 NATIONAL SECURITY STRATEGIC PLAN OBJECTIVES, STRATEGIES AND PERFORMANCE MEASURES

Following is a listing of each Strategic Plan objective, and the accompanying strategies and performance measures focused on FY 1999 and beyond, which are discussed in the FY 1999 congressional budget submission. "Other" is indicated for funding associated with activities supporting a strategy, but not encompassed within the specific performance measures listed for that strategy.

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 1: Extend the life of U. S. nuclear weapons by continuing the Stockpile Life Extension Program and Stockpile Maintenance activities.

Performance Measures:

- A. Meet all scheduled deliveries for stockpile maintenance, surveillance, assessment, and as appropriate, refurbish specific warheads as set forth in the classified Production and Planning Directive.

Other future stockpile activities.

Strategy 2: Improve detection and prediction capabilities for assessing nuclear weapon component performance and the effects of aging.

Performance Measure:

- A. Adhere to schedules set forth in the Enhanced Surveillance Program Plan for activities that enhance knowledge of weapon-relevant physical processes affecting aging and operation of weapon components.

Strategy 3: Continually evaluate the safety, reliability, and performance of the nuclear weapons stockpile.

Performance Measures:

- A. Certify that standards for the safety, reliability, and performance of the nuclear weapons stockpile are met.
- B. Revalidate the military characteristics of the W76 warhead in FY 1999 and begin revalidation of a second weapon type.

Strategy 4: Provide a reliable source of tritium for the nuclear weapons stockpile by FY 2005 or FY 2007 depending on the production option selected.

Performance Measures: Depending upon the choice for primary option for tritium production, either:

- A. Perform the scheduled supporting activities to allow tritium production in a commercial reactor beginning by FY 2003 and tritium

extraction operations beginning by FY 2005; **OR**

- B. Perform the scheduled supporting activities to allow tritium production in the APT by FY 2007; specifically continue engineering development and demonstration activities, complete preliminary design, begin detailed design, and initiate site preparation.

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 1: Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of underground testing.

Performance Measures:

- A. Accelerate the ongoing development of critical, full-physics, three-dimensional weapons simulation codes, specifically perform sustained weapons simulations at 1 trillion operations per second.
- B. Complete the installation of a three trillion operations per second computer system.

Other activities supporting next generation of supercomputing.

Strategy 2: Develop new nuclear weapons physics experimental test capabilities.

Performance Measures:

- A. Meet all cost and schedule goals for construction of the National Ignition Facility in FY 1999 and related technology development.
- B. Complete phase one of the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT) and complete Title I, Preliminary Design of the remainder of the project.
- C. Make the decision within the five year period whether to construct an advanced hydrotest facility and/or an advanced pulsed power facility.

Strategy 3: Advance our understanding of the fundamental characteristics of weapons behavior through weapon systems engineering and advanced experiments to support future assessments of weapons safety, reliability, and performance.

Performance Measures:

- A. In FY 1999, conduct three to four subcritical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapons.

Other experimental and theoretical research.

Other high energy density research.

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise

Strategy 1: Provide an appropriately-sized, cost-effective, safe, secure, and environmentally sound national security enterprise.

Performance Measures:

- A. All facilities required for successful achievement of the Stockpile Stewardship and Management Plan are operational.
- B. The Stockpile Management Restructuring Initiative is on schedule to downsize and modernize future production capabilities.
- C. Adhere to schedules set forth in the Advanced Design and Production Technology Multi-Year Program Plan.
- D. Meet schedules to rebuild, qualify and certify Trident II pits by FY 2001 and develop intermediate pit production capability of 20 pits per year at the Los Alamos National Laboratory by 2007.

Other transportation and logistics capabilities.

Strategy 2: Ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements.

Performance Measures:

- A. Establish strategic alliances and collaborations among the weapons laboratories, industries, and universities to enable effective use of scientific and technical personnel throughout the R&D community.
- B. Implement the Strategic Alignment Initiative and recommendations of the 120-Day Study.

Strategy 3: Ensure and enhance protection of nuclear materials, sensitive information, and facilities.

Performance Measures:

- A. Continue, in FY 1999, material protection, control, and accountability upgrades at three DOE facilities with weapons-usable material.
- B. No loss of U.S. origin nuclear materials in the U.S. and abroad from theft, loss, or illicit trafficking.

Strategy 4: [Strategy 4 does not receive direct Defense Programs support]

Strategy 5: Maintain test readiness and maintain and enhance emergency response and management capabilities to address any nuclear weapons, radiological or other emergency in the U.S. or abroad.

Performance Measures:

- A. The capability to resume underground testing is maintained, in accordance with Presidential direction.
- B. Emergency response assets are exercised in national, state and local drills to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad.
- C. Improve response readiness to any possible weapons of mass destruction (WMD) and terrorist threat contingency using upgraded diagnostics and new equipment.

OBJECTIVE 4: Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

Strategy 1: Dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile in a safe and secure manner.

Performance Measure:

- A. Adhere to schedules for the safe and secure dismantlement of about 500 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.

TABLE 4
DETAILED PROGRAM FUNDING SUMMARY
(Budget Authority in Thousands)

	FY 1997 Adjusted	FY 1998 Adjusted	FY 1999 Request
Stockpile Stewardship			
Operations and Maintenance	1,436,530	1,561,603	1,788,632
Construction	223,637	296,610	399,743
Subtotal, Stewardship	1,660,167	1,858,213	2,188,375
Stockpile Management			
Operations and Maintenance	1,834,470	1,880,202	1,935,803
Construction	94,406	160,885	115,322
Subtotal, Management	1,928,876	2,041,087	2,051,125
Program Direction			
Operations and Maintenance	325,600	250,000	260,500
Subtotal, Weapons Activities	3,914,643	4,149,300	4,500,000
<i>Adjustments/Use of Prior Year Balances</i>	(3,445)	(2,608)	0
Total, Weapons Activities	3,911,198	4,146,692	4,500,000

Weapons Activities - EXECUTIVE BUDGET SUMMARY

TABLE 5
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION BUDGET AUTHORITY LEVELS
(Dollars in Thousands)

Project Number	Project Title	Previous Approp	FY 1997 Adjusted Approp	FY 1998 Adjusted Approp	FY 1999 Request
STOCKPILE STEWARDSHIP					
99-D-108	Renovate Existing Roadways, NV	\$ 0	\$ 0	\$ 0	\$ 2,000
99-D-107	Joint Computational Engineering Laboratory (JCEL), SNL	0	0	0	1,800
99-D-106	Model Validation & System Certification Test Center, SNL	0	0	0	1,600
99-D-105	Central Health Physics Calibration Facility, LANL	0	0	0	3,900
99-D-104	Protection of Real Property-Roof Reconstruction-Ph II, LLNL	0	0	0	7,300
99-D-103	Isotope Sciences Facilities, LLNL	0	0	0	4,000
99-D-102	Rehabilitation of Maintenance Facility, LLNL	0	0	0	6,500
97-D-102	DARHT Facility, LANL	81,400	0	46,300	36,000
96-D-111	National Ignition Facility, LLNL	37,400	131,900	197,800	284,200
96-D-105	Contained Firing Facility Addition, LLNL	6,600	17,100	19,300	6,700
96-D-104	Processing & Environmental Technology Laboratory, SNL	1,980	14,100	0	18,920
96-D-103	Atlas, LANL	8,400	15,100	13,400	6,400
96-D-102	S. Stewardship Facilities Revitalization, Phase VI, VL	2,520	19,250	19,810	20,423
95-D-102	CMR Upgrades Project, LANL a/	52,740	15,000	0	0
94-D-102	Weapons RD&T Facilities Revitalization, Ph V, VL	29,200	7,787	0	0
88-D-106	Weapons RD&T Facilities Revitalization, Ph II, VL	386,619	3,400 b/	0	0
SUBTOTAL, WEAPONS STOCKPILE STEWARDSHIP		\$ 606,859	\$ 223,637	\$ 296,610	\$ 399,743

a/ Funding for the CMR Upgrades Project was transferred to the Stockpile Management decision unit beginning in FY 1998.

b/ Represents use of prior year balances necessary to fund reprogramming 96R44 for the Defense Engineering Laboratory, SNL, Livermore.

TABLE 5 (con't.)
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION BUDGET AUTHORITY LEVELS
(Dollars in Thousands)

Project Number	Project Title	Previous Approp	FY 1997 Adjusted Approp	FY 1998 Adjusted Approp	FY 1999 Request
STOCKPILE MANAGEMENT					
99-D-132	Nuclear Matl's Safeguards & Security Upgd Project, Ph I, LANL \$	0	\$ 0	\$ 0	\$ 9,700
99-D-128	SMRI-Pantex Consolidation, PX	0	0	0	1,108
99-D-127	SMRI-Kansas City Plant II, KC	0	0	0	13,700
99-D-125	Replace Boilers & Controls, KC	0	0	0	1,000
99-D-123	Replace Mechanical Utility Systems, Y-12	0	0	0	1,900
99-D-122	Rapid Reactivation, VL	0	0	0	11,200
98-D-126	Accelerator Production of Tritium, VL	0	0	67,865	TBD
98-D-125	Tritium Extraction Facility, SRS	0	0	9,650	TBD
98-D-124	SMRI-Y-12 Consolidation, Y-12	0	0	6,450	10,700
98-D-123	SMRI-Tritium Facility Modernization & Consolidation, SRS	0	0	11,000	27,500
97-D-124	Steam Plant Wastewater Treatment Facility Upgrade, Y-12	0	600	1,900	0
97-D-123	Structural Upgrades, KC	0	1,400	0	6,400
97-D-122	Nuclear Materials Storage Facility Renovation, LANL	0	4,000	9,200	9,164
97-D-121	Consolidated Pit Packaging System, PX	0	870	0	0
96-D-125	Washington Measurements Operations Facility, AAFB, MD	900	3,825	0	0
96-D-123	Retrofit HVAC & Chillers, Y-12	3,100	7,000	2,700	0
96-D-122	Sewage Treatment Upgrade, PX	600	100	6,900	3,700
95-D-122	Sanitary Sewer Upgrades, Y-12	8,500	10,900	12,600	0

TABLE 5 (con't.)
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
CONSTRUCTION BUDGET AUTHORITY LEVELS
(Dollars in Thousands)

Project Number	Project Title	Previous Approp	FY 1997 Adjusted Approp	FY 1998 Adjusted Approp	FY 1999 Request
STOCKPILE MANAGEMENT (con't.)					
95-D-102	CMR Upgrades Project, LANL a/	0	0	5,000	16,000
94-D-127	Emergency Notification System, PX	4,000	2,200	0	0
94-D-125	Upgrade Life Safety, KC	7,500	5,200	2,000	0
94-D-124	Hydrogen Fluoride Supply System, Y-12	20,000	4,900	1,400	0
93-D-123	Nonnuclear Reconfiguration, Complex 21, VL	150,065	14,487	0	0
93-D-122	Life Safety Upgd, Y-12	19,900	7,200	2,100	3,250
92-D-126	Replace Emergency Notification System, VL	25,600	0	3,200	0
88-D-123	Security Enhancements, PX	115,261	9,739	0	0
88-D-122	FCAP, VL	357,864	21,940	18,920	0
82-D-109	155mm Artillery Fired Atomic Projectile Prod, Fac., Y-12	28,083	2 c/	0	0
78017D	Steam Plant Improvements, Y-12	23,511	43 d/	0	0
SUBTOTAL, WEAPONS STOCKPILE MANAGEMENT		\$ 764,884	\$ 94,406	\$ 160,885	\$ 115,322
TOTAL, WEAPONS ACTIVITIES CONSTRUCTION		\$ 1,371,743	\$ 318,043	\$ 457,495	\$ 515,065

a/ Funding for the CMR Upgrades Project was transferred to the Stockpile Management decision unit beginning in FY 1998.

c/ Represents use of prior year balances necessary to financially close line item 82-D-109, 155mm Artillery Fired Atomic Projectile Production Facility, Y-12.

d/ Represents use of prior year balances necessary to financially close line item 78017D, Steam Plant Improvements, Y-12.

TABLE 6
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
DEFENSE PROGRAMS FUNDING BY SITE
(Dollars in Thousands)

	- - PLANNING ESTIMATES ONLY - -			Program Direction		
	TOTAL DEFENSE PROGRAMS					
	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999
ALBUQUERQUE OPERATIONS OFFICE						
Albuquerque Operations Office	297,800	277,422	228,273	175,754	123,563	128,092
Kansas City Plant	284,232	294,013	290,934	0	0	0
Los Alamos National Laboratory	658,767	793,191	835,930	0	0	0
Pantex Plant	281,535	259,940	247,426	0	0	0
Pinellas Plant	0	0	0	0	0	0
Sandia National Laboratories	662,244	657,145	760,470	0	0	0
SUBTOTAL, AL	2,184,578	2,281,711	2,363,033	175,754	123,563	128,092
CHICAGO OPERATIONS OFFICE						
Argonne National Laboratory	0	0	0	0	0	0
Brookhaven National Laboratory	2,254	1,874	0	0	0	0
Chicago Operations Office	2,669	9,444	60	1,695	60	60
SUBTOTAL, CH	4,923	11,318	60	1,695	60	60
IDAHO OPERATIONS OFFICE	15,747	17,260	10,000	1,877	0	0
NEVADA OPERATIONS OFFICE	230,533	242,180	239,673	36,399	35,121	34,798
OAK RIDGE OPERATIONS OFFICE						
Oak Ridge Operations Office	17,068	15,128	15,023	10,082	8,860	9,691
Oak Ridge Y-12	408,275	429,236	411,142	0	0	0
OR Institute for Science & Education	4,432	14,551	13,663	0	0	0
OR Science & Technology Institute	110	150	150	0	0	0
Oak Ridge National Laboratory	13,252	16,378	10,600	0	0	0
SUBTOTAL, OR	443,137	475,443	450,578	10,082	8,860	9,691

TABLE 6
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
DEFENSE PROGRAMS FUNDING BY SITE
(Dollars in Thousands)

Funding by Site (Continued)	- - PLANNING ESTIMATES ONLY - -			Program Direction		
	TOTAL DEFENSE PROGRAMS			FY 1997	FY 1998	FY 1999
	FY 1997	FY 1998	FY 1999			
OAKLAND OPERATIONS OFFICE						
General Atomics	9,728	10,520	9,100	0	0	0
Lawrence Berkeley Laboratory	975	0	0	0	0	0
Lawrence Livermore National Laboratory	625,608	651,189	785,577	0	0	0
Naval Research Laboratory	9,075	9,000	9,500	0	0	0
Oakland Operations Office	14,368	12,757	14,876	12,428	9,800	10,676
University of Rochester	22,059	25,963	29,050	0	0	0
SUBTOTAL, OAK	681,813	709,429	848,103	12,428	9,800	10,676
OHIO FIELD OFFICE						
Fernald	3,588	0	0	0	0	0
Mound Plant	23,533	0	0	0	0	0
SUBTOTAL, OH	27,121	0	0	0	0	0
RICHLAND OPERATIONS OFFICE						
Pacific Northwest Laboratory	18,711	26,584	0	0	0	0
Richland Operations Office	21,185	20,700	0	570	0	0
SUBTOTAL, RL	39,896	47,284	0	570	0	0
ROCKY FLATS FIELD OFFICE	41,200	0	0	0	0	0
SAVANNAH RIVER OPERATIONS OFFICE						
Savannah River Operations Office	6,145	7,184	8,652	1,930	3,060	3,077
Savannah River Westinghouse	126,845	150,096	129,291	0	0	0
SUBTOTAL, SR	132,990	157,280	137,943	1,930	3,060	3,077
HEADQUARTERS	112,705	207,395	450,610	84,865	69,536	74,106
Subtotal	3,914,643	4,149,300	4,500,000	325,600	250,000	260,500
Adjustments	(3,445)	(2,608)	0	0	(284)	0
GRAND TOTAL	3,911,198	4,146,692	4,500,000	325,600	249,716	260,500

TABLE 6
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
DEFENSE PROGRAMS FUNDING BY SITE
(Dollars in Thousands)

- - PLANNING ESTIMATES ONLY - -

Funding by Site (Continued)	Stockpile Stewardship			Stockpile Management		
	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999
ALBUQUERQUE OPERATIONS OFFICE						
Albuquerque Operations Office	6,298	0	2,280	115,748	153,859	97,901
Kansas City Plant	2,841	2,000	4,000	281,391	292,013	286,934
Los Alamos National Laboratory	396,519	469,753	541,080	262,248	323,438	294,850
Pantex Plant	0	0	0	281,535	259,940	247,426
Pinellas Plant	0	0	0	0	0	0
Sandia National Laboratories	458,400	437,450	511,553	203,844	219,695	248,917
SUBTOTAL, AL	864,058	909,203	1,058,913	1,144,766	1,248,945	1,176,028
CHICAGO OPERATIONS OFFICE						
Argonne National Laboratory	0	0	0	0	0	0
Brookhaven National Laboratory	0	0	0	2,254	1,874	0
Chicago Operations Office	248	0	0	726	9,384	0
SUBTOTAL, CH	248	0	0	2,980	11,258	0
IDAHO OPERATIONS OFFICE	0	0	0	13,870	17,260	10,000
NEVADA OPERATIONS OFFICE	162,755	184,008	184,167	31,379	23,051	20,708
OAK RIDGE OPERATIONS OFFICE						
Oak Ridge Operations Office	0	0	0	6,986	6,268	5,332
Oak Ridge Y-12	7,188	7,201	7,432	401,087	422,035	403,710
OR Institute for Science & Education	0	0	0	4,432	14,551	13,663
OR Science & Technology Institute	110	150	150	0	0	0
Oak Ridge National Laboratory	300	300	310	12,952	16,078	10,290
SUBTOTAL, OR	7,598	7,651	7,892	425,457	458,932	432,995

TABLE 6
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
DEFENSE PROGRAMS FUNDING BY SITE
(Dollars in Thousands)

- - PLANNING ESTIMATES ONLY - -

Funding by Site (Continued)

	Stockpile Stewardship			Stockpile Management		
	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999
OAKLAND OPERATIONS OFFICE						
General Atomics	9,728	10,520	9,100	0	0	0
Lawrence Berkeley Laboratory	975	0	0	0	0	0
Lawrence Livermore National Laboratory	575,506	603,428	737,021	50,102	47,761	48,556
Naval Research Laboratory	9,075	9,000	9,500	0	0	0
Oakland Operations Office	1,671	2,700	4,200	269	257	0
University of Rochester	22,059	25,963	29,050	0	0	0
SUBTOTAL, OAK	619,014	651,611	788,871	50,371	48,018	48,556
OHIO FIELD OFFICE						
Fernald	0	0	0	3,588	0	0
Mound Plant	0	0	0	23,533	0	0
SUBTOTAL, OH	0	0	0	27,121	0	0
RICHLAND OPERATIONS OFFICE						
Pacific Northwest Laboratory	0	0	0	18,711	26,584	0
Richland Operations Office	0	0	0	20,615	20,700	0
SUBTOTAL, RL	0	0	0	39,326	47,284	0
ROCKY FLATS FIELD OFFICE	0	0	0	41,200	0	0
SAVANNAH RIVER OPERATIONS OFFICE						
Savannah River Operations Office	0	0	0	4,215	4,124	5,575
Savannah River Westinghouse	1,500	1,515	1,947	125,345	148,581	127,344
SUBTOTAL, SR	1,500	1,515	1,947	129,560	152,705	132,919
HEADQUARTERS	4,994	104,225	146,585	22,846	33,634	229,919
Subtotal	1,660,167	1,858,213	2,188,375	1,928,876	2,041,087	2,051,125
Adjustments	(3,400)	(454)	0	(45)	(1,870)	0
GRAND TOTAL	1,656,767	1,857,759	2,188,375	1,928,831	2,039,217	2,051,125

TABLE 7
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
Contractor Employment Estimates

	Total Weapons Program			Weapons Stockpile Stewardship			Weapons Stockpile Management		
	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999
ALBUQUERQUE OPERATIONS OFFICE									
Kansas City Plant	2,647	2,609	2,548	34	38	24	2,613	2,571	2,524
Los Alamos National Laboratory	3,702	3,959	4,166	2,138	2,243	2,409	1,564	1,716	1,757
Pantex Plant	2,662	2,620	2,494	3	0	0	2,659	2,620	2,494
Pinellas Plant	0	0	0	0	0	0	0	0	0
Sandia National Laboratories	4,055	4,008	4,035	2,479	2,391	2,417	1,576	1,617	1,618
SUBTOTAL, AL	13,066	13,196	13,243	4,654	4,672	4,850	8,412	8,524	8,393
CHICAGO OPERATIONS OFFICE									
Argonne National Laboratory	13	13	14	3	3	4	10	10	10
Brookhaven National Laboratory	19	21	20	0	0	0	19	21	20
SUBTOTAL, CH	32	34	34	3	3	4	29	31	30
IDAHO OPERATIONS OFFICE	115	108	107	0	0	0	115	108	107
Wackenhut Services, NV	145	175	175	145	175	175	0	0	0
Bechtel, Nevada	1,491	1,582	1,582	1,237	1,328	1,328	254	254	254
NEVADA OPERATIONS OFFICE	1,636	1,757	1,757	1,382	1,503	1,503	254	254	254
OAK RIDGE OPERATIONS OFFICE									
Oak Ridge Operations Other	65	79	79	6	7	7	59	72	72
Oak Ridge Y-12	4,274	4,259	4,058	95	105	85	4,179	4,154	3,973
ORISE	60	62	62	0	0	0	60	62	62
SUBTOTAL, OR	4,399	4,400	4,199	101	112	92	4,298	4,288	4,107

TABLE 7
DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
Contractor Employment Estimates

	Total Weapons Program			Weapons Stockpile Stewardship			Weapons Stockpile Management		
	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999	FY 1997	FY 1998	FY 1999
OAKLAND OPERATIONS OFFICE									
Lawrence Livermore National Laboratory	3,294	3,420	3,570	3,062	3,116	3,265	232	304	305
OHIO OPERATIONS (Mound Plant)	19	0	0	0	0	0	19	0	0
RICHLAND OPERATIONS OFFICE	115	115	115	0	0	0	115	115	65
ROCKY FLATS OPERATIONS OFFICE	422	0	0	0	0	0	422	0	0
SR Ecology Lab	0	0	0	0	0	0	0	0	0
Westinghouse Savannah River Co.	1,351	1,349	1,350	2	4	5	1,349	1,345	1,345
Wackenhut Services, SR	50	50	50	0	0	0	50	50	50
SAVANNAH RIVER OPERATIONS OFFICE	1,401	1,399	1,400	2	4	5	1,399	1,395	1,395
TOTAL, DEFENSE PROGRAMS	24,499	24,429	24,425	9,204	9,410	9,719	15,295	15,019	14,656

TABLE 8
Federal Employment by Site
FY 1997 - FY 1999

	SAI TARGET	Actual Total		Headquarters	Field	Operations Offices				
						Albuquerque	Nevada	Oakland	Oak Ridge	Savannah River
FY 1997 MY		1,992	a/	341	1,651	1,205	276	85	67	18
FY 1997 EOY	1,963	1,951		335	1,616	1,176	274	83	65	18
FY 1998	1,895	1,891	b/	291	1,600	1,154	c/ 264	83	66	33 c/
FY 1999	1,878	1,878	d/	286	1,592	1,153	d/ 260	82	64	33

a/ DP staffing at time of the transmission of the "120-Day Study" to Congress on June 4, 1997 was 1,992.

b/ FY 1998 SAI target of 1,895 is expected to be obtained by the end of January 1998. Thus, DP will reduce total staffing by over 100 positions within the first 8 months of 120-Day Study implementation activities.

c/ FY 1998 reflects transfer of funding responsibility between DP and Office of Environmental Management for staff at AL (-16 for DP) at SR (+16 for DP).

d/ FY 1999 AL staffing includes 18 transfers from Office of Environmental Management to support management of newly generated waste

TABLE 9
Defense Programs
FY 1999 Congressional Budget Request
Construction Outyear Estimates/Advance Appropriations
(Dollars in thousands)

	PY	FY 1998 Approp	FY 1999 Request	FY 2000 Request	FY 2001 Request	FY 2002 Request	FY 2003 Request
Weapons Stockpile Stewardship							
99-D-108 Renovate Existing Roadways, NV	0	0	2,000	9,005	0	0	0
99-D-107 Joint Computational Engrg Lab (JCEL), SNL	0	0	1,800	10,700	16,369	0	0
99-D-106 Model Validation & Sys Cert Test Cntr, SNL	0	0	1,600	9,200	7,419	0	0
99-D-105 Central Health Physics Calibra Fac, LANL	0	0	3,900	0	0	0	0
99-D-104 Protec of Real Prop-Roof Recon-Ph II, LLNL	0	0	7,300	6,400	6,200	0	0
99-D-103 Isotope Sciences Facilities, LLNL	0	0	4,000	10,000	5,400	0	0
99-D-102 Rehabilitation of Maintenance Fac, LLNL	0	0	6,500	1,400	0	0	0
97-D-102 DARHT Facility, LANL	81,400	46,300	36,000	61,000	35,000	0	0
96-D-111 National Ignition Facility, LLNL	169,300	197,800	284,200	248,100	74,100	65,000	7,200
96-D-105 Contained Firing Fac Addition, LLNL	23,700	19,300	6,700	0	0	0	0
96-D-104 PETL, SNL	16,080	0	18,920	10,900	0	0	0
96-D-103 Atlas, LANL	23,500	13,400	6,400	0	0	0	0
96-D-102 Stockpile Stewardship Facilities Revitalization, Phase VI							
Water Well Replacements, LANL	11,200	4,500	1,100	0	0	0	0
Fire Protection Imprvmnts, LANL	6,570	5,450	4,880	0	0	0	0
138 kV Substation Mod, NTS a/	1,000	2,667	2,667	1,975	3,683	0	0
Real Property Prot (Roofs), LLNL	3,000	4,810	0	0	0	0	0
Strm Drain, San Swr, & Dom Wtr, SNL	0	1,483	7,326	6,565	0	0	0
Site 300 Fire Sta/Medical Fac, LLNL	0	900	4,450	0	0	0	0
Subtotal, SS Fac Revite, Phase VI	21,770	19,810	20,423	8,540	3,683	0	0

a/ A proposed Congressional reprogramming would increase funding for the 138kV Substation Modernization Subproject at NTS in FY 1998 by \$3,683,000. If approved, the funding reflected in FY 2001 would not be needed for this project and would be moved to the New Start Wedge.

TABLE 9 (con't)
Defense Programs
FY 1999 Congressional Budget Request
Construction Outyear Estimates/Advance Appropriations
(Dollars in thousands)

		FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
	PY	Approp	Request	Request	Request	Request	Request
Weapons Stockpile Stewardship (con't)							
95-D-102 CMR Upgrades Project, LANL	b/	67,740	0	0	0	0	0
Subtotal, Weapons Stockpile Stewardship, Advance Appropriations		403,490	296,610	399,743	375,245	148,171	65,000
New Start Wedge		0	0	0	15,500	82,348	165,000
Total, Weapons Stockpile Stewardship		403,490	296,610	399,743	390,745	230,519	230,000

b/ Funding for the CMR Upgrades Project was transferred to the Stockpile Management decision unit beginning in FY 1998.

TABLE 9 (con't.)
Defense Programs
FY 1999 Congressional Budget Request
Construction Outyear Estimates/Advance Appropriations
(Dollars in thousands)

		PY	FY 1998 Approp	FY 1999 Request	FY 2000 Request	FY 2001 Request	FY 2002 Request	FY 2003 Request
Weapons Stockpile Management								
99-D-132	Nuc Matls Safegrds & Sec Upgd Proj, Ph I, LANL	0	0	9,700	14,300	15,000	11,800	9,946
99-D-128	SMRI-Pantex Consolidation, PX	0	0	1,108	3,429	12,775	7,647	8,558
99-D-127	SMRI-Kansas City Plant II, KC	0	0	13,700	24,500	21,700	31,300	14,000
99-D-125	Replace Boilers & Controls, KC	0	0	1,000	13,000	0	0	0
99-D-123	Replace Mechanical Utility Systems, Y-12	0	0	1,900	5,700	0	0	0
99-D-122	Rapid Reactivation, VL	0	0	11,200	15,800	0	0	0
98-D-126	Accelerator Production of Tritium, VL	0	67,865	TBD	TBD	TBD	TBD	TBD
98-D-125	Tritium Extraction Facility, SRS	0	9,650	TBD	TBD	TBD	TBD	TBD
98-D-124	SMRI-Y-12 Consolidation, Y-12	0	6,450	10,700	11,900	11,100	2,350	0
98-D-123	SMRI-Tritium Fac Mod & Cons, SRS	0	11,000	27,500	30,000	16,500	10,500	2,300
97-D-124	Stm Plt Wstwtr Trtmnt Fac Upgd, Y-12	600	1,900	0	0	0	0	0
97-D-123	Structural Upgrades, KC	1,400	0	6,400	4,800	5,400	0	0
97-D-122	Nuc Materials Stor Fac Ren, LANL	4,000	9,200	9,164	0	0	0	0
97-D-121	Con Pit Pack Sys, PX	870	0	0	0	0	0	0
96-D-123	Retrofit HVAC & Chillers, Y-12	10,100	2,700	0	0	0	0	0
96-D-122	Sewage Trtmnt Upgd, PX	700	6,900	3,700	0	0	0	0
95-D-102	CMR Upgrades Project, LANL	0	5,000	16,000	20,000	20,450	17,400	15,800
95-D-122	Sanitary Sewer Upgd, Y-12	19,400	12,600	0	0	0	0	0
94-D-125	Upgrade Life Safety, KC	12,700	2,000	0	0	0	0	0
94-D-124	Hydro Fluor Sply Sys, Y-12	24,900	1,400	0	0	0	0	0
93-D-122	Life Safety Upgd, Y-12	27,100	2,100	3,250	0	0	0	0

b/ Funding for the CMR Upgrades Project was transferred to the Stockpile Management decision unit beginning in FY 1998.

TABLE 9 (con't.)
Defense Programs
FY 1999 Congressional Budget Request
Construction Outyear Estimates/Advance Appropriations
(Dollars in thousands)

	PY	FY 1998 Approp	FY 1999 Request	FY 2000 Request	FY 2001 Request	FY 2002 Request	FY 2003 Request
Weapons Stockpile Management (con't)							
92-D-126 Repl Emer Not Sys, VL	25,600	3,200	0	0	0	0	0
88-D-122 FCAP, VL							
91-27 Refur Power Sply, Y-12	46,047	8,550	0	0	0	0	0
92-31 Repl/Refur Det Ele, Y-12	9,420	0	0	0	0	0	0
93-35 Upgd Materials Engr Lab, KC	9,230	3,870	0	0	0	0	0
95-39 Repl Comp Air Sys, PX	3,900	0	0	0	0	0	0
96-41 Repl Clng Tow, E., KC	5,020	0	0	0	0	0	0
97-42 Hydraulic Press, Y-12	7,500	6,500	0	0	0	0	0
Fully Funded Projects	298,687	0	0	0	0	0	0
Subtotal, FCAP	379,804	18,920	0	0	0	0	0
Subtotal, Weapons Stockpile Management, Advance Appropriations	507,174	160,885	115,322	143,429	102,925	80,997	50,604
New Start Wedge	0	0	0	63,551	94,020	123,204	120,190
Total, Weapons Stockpile Management	507,174	160,885	115,322	206,980	196,945	204,201	170,794
Subtotal, Defense Programs, Advance Appropriations	910,664	457,495	515,065	518,674	251,096	145,997	57,804
New Start Wedge	0	0	0	79,051	176,368	288,204	328,190
Total, Defense Programs	910,664	457,495	515,065	597,725	427,464	434,201	385,994

APPENDIX A STRATEGIC NARRATIVE

IMPLEMENTATION OF GOVERNMENT PERFORMANCE AND RESULTS ACT

"In essence, the Act, which is referred to as 'GPRA' or 'the Results Act,' seeks to shift the focus of federal management and decision making away from a preoccupation with the activities that are undertaken -- such as grants or inspections made -- to focus on the results of those activities -- such as real gains in employability, safety, responsiveness, or environmental quality."

**"We found that agencies are confronting five key challenges that have limited the implementation of the Results Act...
(5) linking performance plans to the budget process."**

Statement of L. Nye Stevens, Director of Federal Management and Workforce Issues, GAO, June 3, 1997.

Defense Programs Planning Processes

Defense Programs has been working towards implementation of GPRA for the past several years. Essential to this process is an orderly flow of planning and guidance documents starting with the goals, objectives and strategies in the DOE Strategic Plan, and ending with evaluation of results achieved by the contractors who carry out the programs to accomplish the objectives. The DP planning and evaluation structures can be explained simplistically in the following chart:

Planning	Evaluation
DOE Strategic Plan	Secretary's Annual Performance Agreement
Stewardship and Management Plan (Greenbook) Individual Program Plans (<i>ASCI, ICF, Enhanced Surveillance</i>) Project Plans (<i>National Ignition Facility, Tritium</i>)	Program Reviews (<i>mainly Headquarters</i>)
Detailed Planning (<i>P&PD, PCD, Master Nuclear Schedule, dismantlements, compliance schedules, construction project execution plans</i>)	Ongoing program oversight (<i>mainly operations offices</i>)
Work Authorizations Task Orders/Contracts	Task oversight and Contractor evaluations (<i>mainly operations offices</i>)

This "cascade" of planning and guidance and evaluation must be in place at all levels to provide the framework for performance management, and to clearly define roles and missions for each entity in the program. The Department's Strategic Management System is the overall framework for the Department's efforts in this direction. Defense Programs' actions are within this framework.

Defense Programs' first attempt at Strategic Planning as outlined in GPRA was part of the FY 1994 DOE strategic planning document promulgated by former Energy Secretary O'Leary in April, 1994. This initial effort was the impetus for many supporting efforts throughout the DP Headquarters and field elements that have come to fruition in time to contribute to the FY 1999 budget formulation cycle. In 1997, the Strategic Plan was updated as part of the DOE-wide effort involving DP federal staff, technical input from M&O contractor representatives, and reviewed by the executive and legislative branches. This updated strategic plan was published in September 1997, and is the foundation for the FY 1999 budget, and the approach to the FY 1999 budget that follows.

As indicated in the diagram above, there are several detailed program planning documents that flow directly from the Strategic Plan. These include the comprehensive Stockpile Stewardship and Management Plan (the Greenbook) which was updated in early 1997; plus numerous individual program plans, e.g., the Accelerated Strategic Computing Initiative Plan, the ICF Five Year Program Plan, the Enhanced Surveillance Plan, the Technology Partnership Plan, and the project execution plan for the National Ignition Facility. These plans are primarily Headquarters documents which have been developed jointly by Federal employees at Headquarters and the operations offices and representatives from the various management and operating (M&O) contractors who execute the technical activities to carry out the DP programs. They contain strategies and higher level performance measures that are appropriate for Headquarters oversight.

These plans, in turn, provide guidance to the field elements for detailed program execution and planning. Because Defense Programs is primarily a decentralized organization, much of the detailed planning is carried out between the operations offices and the M&O contractors, with oversight from the DP Headquarters staff. Examples of detailed planning at this level include the Program Control Documents and Master Nuclear Schedule for stockpile management activities, most construction project execution plans, the ASCI implementation plans, and compliance schedules for individual facilities. These plans contain specific strategies, multi year program plans, tasks, milestone schedules and deliverables which are the basis on which performance measures should be negotiated. These documents and associated performance measures are reflected in work authorizations and task orders, which tie directly to the budget, and should ultimately tie to the M&O contracts.

All levels on this cascade of guidance and evaluation must be operational to achieve true performance measurement as envisioned in the GPRA. In Defense Programs, we are working towards achieving this cascade as part of our reengineering efforts, but all of the linkages are not yet in place. It is important that ultimately all levels be operational so that appropriate high level oversight can be carried out by the Congress with assurance that those high level measures are supported by more detailed oversight at appropriate lower levels within the Department. We are progressing toward this goal through our organizational reengineering efforts associated with the 120 Day Study, and through improved planning and evaluation systems which are maturing at Headquarters and in the field organizations.

Focus for DP's FY 1999 Budget Request

Consistent with GPRA direction to focus on the program's outcomes¹ rather than lower level workload measures, the FY 1999 budget is written to focus on the top two levels of the cascade diagram. This will allow a presentation that relates directly to the performance measures in the DOE Strategic Plan, and includes information on how the department plans, funds and executes the activities that support these high level performance measures. Lower level performance measures between the operations offices and M&O contractors are not discussed in this budget document; rather, as stated earlier, this budget and DP's management systems must be sufficient to assure the Congress that we are accountable for the performance at the lower level that aggregates to the high level measures discussed in the budget and strategic plan.

For DP, the strategic plan performance measures are matrixed to the budget and accounting structure -- the "program activities" as referenced in GPRA. The program activities are the budget structure agreed on between DP and the Congress which forms the basis for DP's annual funding request and appropriations, and for funds control and accounting. Integral to DP's approach to GPRA is a matrix which correlates the performance measure information in the strategic plan to the budget and accounting structure. In this manner, budget information is related to the performance measures, but it is also recognizes that financial data is not the sole performance measures. To do otherwise, that is, to associate performance measures only with the accounting structure (as DP did as an interim approach to initiate our transition to the GPRA mode in FY 1998 Congressional Budget Request), does not facilitate understanding the connection between the strategic objectives and the performance measures. The performance measures are the "whats", and the strategic objectives are the "whys". Correlating the "hows" in the accounting structure to the "whys" and the "whats" is the strength of the GPRA approach.

Budget Format

Defense Programs has developed the following FY 1999 budget request format as a candidate approach to specifically address the GPRA requirement² to relate the budget to the Strategic Plan.

The budget format as conceived by DP has three main components: Strategic Narrative; Strategic Tables; and Budget and Accounting Structure. The Strategic Narrative and Tables are new sections designed for GPRA; the budget and accounting section is essentially the same as the Defense Programs FY 1998 Congressional Budget Request. The Strategic Narrative and Strategic Tables are included here as Appendix A to the Executive Budget Summary. We have also aligned the supporting activities discussed here in the GPRA Strategic Narrative with the budget and accounting structure in the following section of the budget request.

¹Performance Budgeting: Past Initiatives Offer Insights for GPRA Implementation (Letter Report, 03/27/97, GAO/AIMD-97-46).

²Ibid.

The Strategic Narrative and Tables in Appendix A are structured as follows:

1. Objective (from Strategic Plan)

a. Strategic Tables (detailed matrices correlating strategies with budget structure)

2. Strategy (from Strategic Plan)

a. Performance Measure (from Strategic Plan plus some added to assure that the programs of interest are specifically addressed)

1. Supporting activity (provided by DP programs offices and contractors - related to program planning, such as the Greenbook)

The Strategic Narrative section is structured to explain objectives, strategies and performance measures for DP explicit in the DOE Strategic Plan, and to correlate DP's supporting activities and funding estimates to these performance measures. We are also trying to provide visibility in the budget for the FY 1998 Performance Agreement and the FY 1999 Performance Plan. The Strategic Narrative addresses the high level Performance Measures from the Strategic Plan in terms of supporting (program) activities that connect with the Stockpile Stewardship and Management Plan (Green Book). In the GPRA approach to the budget request, DP's activities are explained in terms of the Strategic Plan Objectives, Strategies, and Performance Measures, supported by information from the budget and accounting structure, not vice versa, as was done in FY 1998.

The **Objective pages** provide overviews of the objectives, expressed in terms of the strategies associated with each objective. High level funding information is presented in two charts and a simple table for each objective. A detailed funding crosswalk follows the objective page containing all of the DP funding estimated to accomplish each objective. These estimates are expressed in a matrix correlating the strategies and the budget and accounting structure.

The **Strategy pages** discuss the program activities associated with each strategy, and provide background on policy, program participants and locations, written program plans and guidance associated with each strategy, and how performance is measured. The performance measures from the Strategic Plan supporting each strategy are displayed, with associated funding estimates.

The **Performance Measure pages** highlight each FY 1999 measure in the Strategic Plan, plus a few additional measures added to assure that specific programs of interest are adequately visible. Detailed planning documents are listed, participants and locations are stated, accomplishments are highlighted, and how and by whom performance will be measured is discussed. The supporting activities presented on the performance measure pages, developed with extensive input from laboratories and contractors performing the work, represent the most significant supporting activities necessary to meet the high level DP measures stated in the Plan. The funding estimates associated with each supporting activity can be crosswalked to the budget and accounting structure, and the supporting activities are repeated on these pages to indicate the funding estimated from each associated B&R. However, please note that the funding estimates contained on the GPRA pages are total estimates - that is, in many cases, combining both Stockpile Stewardship and Stockpile Management funding supporting a performance measure. The estimates in the budget and accounting structure pages later in the document are separate by decision unit. We anticipate change to the budget and accounting structure in FY 2000 that will somewhat mitigate

this issue in the future.

The supporting activities have lower level performance measures as well, documented in more detailed plans, most often tasked through annual program plans and the Work Authorizations, and measured at the DP Program or Operations Office level. "Other" is indicated for funding associated with activities supporting a strategy, but not encompassed within the specific performance measures listed for that strategy.

This candidate format represents a fundamental change in approach to budget justification, and as such, should be viewed as a "work-in-progress." We are looking forward to continuing constructive dialogue between the Congress and the Administration as we meet the challenges of not only changing the format of this product, but more importantly, changing the processes by which we formulate and justify our program budget requests and measure our performance against these commitments.

APPENDIX B

FINAL REPORT ON DEFENSE PROGRAMS FY 1997 SECRETARIAL PERFORMANCE AGREEMENT

NS-1: REDUCING THE WEAPONS STOCKPILE

Measure 1. Dismantling 556 weapons in FY 1997 without adversely impacting the environment, public safety and health. **Status: Partially Successful.** As of September 30, 1997, 498 weapons were dismantled against a revised fiscal year total goal of 556. The W-69 dismantlement program was successfully started on July 21, 1997, but was suspended on September 24, 1997, after completing 42 weapons due to a safety concern over the detonator removal process. The remaining shortfall is from enduring weapon programs that were scheduled for disassembly in support of stockpile management activities.

NS-2: REPLACING UNDERGROUND TESTING WITH SCIENCE

Measure 1. Updating the annual Stockpile Stewardship and Management Program Plan. **Status: Successful.** The final version of the first annual update to the Stockpile Stewardship and Management Plan is complete, and was formally released on October 30, 1997.

Measure 2. Installing the first teraflop platform by September 1997 to begin next-generation weapon simulations. **Status: Successful.** The first teraflop platform was installed in June 1997.

Measure 3. Meeting National Ignition Facility construction milestones with: (a) Site selection by December 1996. **Status: Successful.** (b) Initiation of site preparation and long lead procurements by March 1997. **Status: Successful.** Both were initiated in March. Site preparation is well underway and long lead procurements will continue for several years. (c) Remain on schedule to complete project in 3rd quarter of 2003 with total project costs of \$1.2 billion. **Status: Successful.**

Measure 4. Conducting key stewardship experiments on the Los Alamos Neutron Science Center (LANCSE) to: (a) Demonstrate the feasibility of high-energy proton radiography in submillisecond imaging. **Status: Successful.** In August 1997 dynamic proton radiography experiments with a newly-developed multiple-snapshot capability provided an extensive set of data on the performance of stockpile high explosives. These data are providing direct validation for modeling used in the B-61-11 certification process. (b) Measure crystallographic texture of stockpile plutonium samples at various stages of aging. **Status: Successful.** Experimenters used the High Intensity Power Diffractometer at LANSCE to measure texture (i.e. the distribution of crystal grain orientations) in ^{239}Pu samples taken from a stockpile unit that had been dismantled as part of the stockpile surveillance program. Texture was shown to reveal aspects of processing history that are not available through other means of surveillance. (c) Improve the nuclear cross section database of plutonium in support of enhanced archival analysis. **Status: Successful.** Gamma rays from the residual ^{238}Pu nuclei have been identified and analyzed over the range of incident neutron energies relevant to nuclear weapons test data. These data will be

used to improve device performance modeling in the next-generation weapons design computer codes being developed in the DOE's Accelerated Strategic Computing Initiative.

Measure 5. Meeting Dual Axis Radiographic Hydrodynamic Test (DARHT) facility construction milestones by: **(a)** Selecting technology and determining scope of second axis by June 1997. **Status: Partially Successful.** The technology selection for the second axis was made on September 22, 1997. Because the cost of the selected technology for the second axis will significantly exceed the planning estimate for the project, the Los Alamos National Laboratory reviewed and revised the baseline change proposal (BCP) and cost estimate. [*Technology selection and revised TEC reflected in data sheet in FY 1999 Congressional Budget Request*]. **(b)** Completing 3/4 of the hydrotest firing site by September 1997. **Status: Successful.** Approximately 75% of the hydrotest firing site work was completed.

Measure 6. Conducting two subcritical experiments at the Nevada Test Site. **Status: Successful.** Defense Programs successfully conducted the first subcritical experiment, Rebound, on July 2, 1997, and the second subcritical experiment, Holog, on September 18, 1997.

NS-3: DEVELOPING A REPLACEMENT SOURCE OF TRITIUM

Measure 1. Issuing a draft request for proposal for supplying tritium through the purchase or lease of commercial reactors or irradiation services by March 31, 1997. **Status: Successful.** The draft RFP was released on January 28, 1997.

Measure 2. Making departmental decision on the accelerator super conducting design options by March 1997. **Status: Successful.** On March 14, 1997, after receipt and evaluation of an independent JASONs study, the department gave the go-ahead for the design team to incorporate super conducting in its final Conceptual Design Report.

Measure 3. Approving the accelerator plant project baseline by September 1997 to be ready to start engineering design in October 1997. **Status: Successful.** The final Conceptual Design Report was issued in April 1997, independent verification and validation of the cost estimate was completed in June 1997, and Critical Decision #2, Approval of Baseline, was received on September 19, 1997.

Measure 4. Approving the commercial reactors's tritium extraction facility project baseline by September 1997 to be ready to start engineering design by October 1997. **Status: Partially Successful.** The final Conceptual Design Report was issued in June 1997, independent verification and validation of the cost estimate was completed by July 1997, and Critical Decision #2, Approval of Baseline, occurred on October 20, 1997.

NS-4: DOWNSIZING THE NUCLEAR WEAPONS COMPLEX

Measure 1. Releasing the Stockpile Stewardship and Management Final Programmatic Environmental Impact Statement (PEIS) by December 1996. **Status: Successful.** The PEIS was released in November 1996.

Measure 2. Completing the Record of Decision on the PEIS by December 1996. **Status: Successful.** The Record of Decision was completed in December 1996.

Measure 3. Completing Conceptual Design Reports (CDR) for each nuclear weapons production facility that will be downsized by the end of the FY 1997. **Status: Successful.** CDRs for the Savannah River Tritium Facility, the Kansas City Plant, the Y-12 Site and the Pantex Plant have been completed.

NS-5: MAINTAINING THE ENDURING STOCKPILE

Measure 1. Certifying annually that the stockpile is safe and reliable. **Status: Successful.** The 1997 Annual Certification Technical Reports were successfully completed by the laboratories and approved by DOE, meeting all milestones. The Annual Stockpile Certification package was approved by the Nuclear Weapons Council in late October and signed by the Secretaries of Defense and Energy and forwarded to the President in November 1997.

Measure 2. Meeting all DoD annual weapons alteration, modification, and surveillance schedules. **Status: Partially Successful.** DP is conducting six weapon alterations and two weapon modifications. We are ahead of schedule for the B61 Mod 11 conversion; and on schedule for Alt 317 (W76 neutron generator), Alt 335 (B61 Trajectory Sensing Signal Generator), Alt 336 (B61 CF3087 cable), Alt 339 (B61 Multiple Code Coded Switch Encryption Translator), Alt 342 (W87 Life Extension Program), Alt 750 (B83 radar), and the B83 Mod 1 conversion.

There are three major activities under the core surveillance program: flight tests, nuclear component laboratory tests, and nonnuclear systems laboratory tests. Based on our surveillance plans developed at the beginning of this fiscal year, we are on schedule for flight tests under DOE control, and slightly behind on nuclear components laboratory tests and nonnuclear systems laboratory tests due to Pantex operational issues associated with radiography and mass properties testing. DOE has developed a plan to recover from these operational impacts and, at this time, we do not anticipate a major problem with being able to provide the DoD a weapon reliability assessment.

Measure 3. Maintaining the Nevada Test Site at a 2-3 year readiness to resume testing.

Status: Successful. DOE is maintaining the capabilities needed to safely conduct an underground nuclear test within two to three years of an order to do so by the President. The capabilities that are being maintained and certified include: (1) those aspects of the physical infrastructure of the Nevada Test Site (roads, utilities, communications, etc.) needed for nuclear testing; (2) the operational facilities (such as diagnostic rack and assembly facilities) and; (3) the technical personnel at both Nevada and the National Laboratories needed to field a safe and technically useful underground nuclear test.

Measure 4. Completing initial risk assessments for each enduring stockpile weapon by the end of FY 1997. **Status: Successful.** The initial risk assessments, for each type of enduring stockpile weapon, were completed March 26, 1997. The initial risk assessments are being consolidated into one risk management matrix, from which DP will be able to issue a prioritized list of issues for research and development, enhanced surveillance, and advanced manufacturing activities.

Measure 5. Completing the W87 Life Extension Program design assessment phase by June 1997. **Status: Successful.** Design assessment activities for the first design of the W87 Life Extension Program were completed in February 1997. The assessment identified the need to modify the design, which was frozen in late September 1997. The revised design will undergo additional assessment/validation. The follow-on assessment activities are scheduled. It is anticipated the follow-on design assessment will be completed by third quarter FY 1998.

Measure 6. Developing enhanced surveillance techniques. **Status: Successful.** FY 1997 milestones and deliverables (as documented in the Enhanced Surveillance Program's FY 1997-1 program plan) were completed on schedule. The program continues to produce new surveillance tools (age-focused diagnostics and age-aware models) in support of stockpile life extension and weapons refurbishments.

Measure 7. Resuming Y-12 special nuclear material operations necessary to support DoD requirements. **Status: Successful.** All operations necessary to support DoD requirements this Fiscal Year are complete. Y-12 stockpile maintenance capabilities of shipping/receiving, assembly/disassembly, and depleted uranium operations 9215 are operational and, in April 1997, DOE authorized Y-12 to resume the disassembly and evaluation of canned subassemblies. Casting operations; rolling, forming, and machining capabilities; and enriched uranium recovery capabilities are scheduled to be on line in the 2nd quarter of FY 1998.

DEFENSE PROGRAMS FY 1998 PERFORMANCE AGREEMENT WITH THE PRESIDENT
(Budget Authority Dollars in Millions)

<i>FY 1998 Performance Measure</i>	<i>Budget Reference³</i>	<i>FY 1997 Estimate</i>	<i>FY 1998 Estimate</i>
Meeting all DoD annual weapons alteration, modification and surveillance schedules.	1.1	290.8	287.2
Certifying nuclear weapon stockpile safety, reliability and performance according to DOE/DoD procedures	1.3.a 1.3.b	180.2	177.2
Selecting one of the dual-path options, a new proton accelerator or use of commercial light water reactors, to become the primary tritium supply technology	1.4.a/b	150.0	262.0
Meeting established schedules for the development and installation of a 3-trillion operations per second computer system	2.1.b	0.0	58.2
Beginning the physical construction according to schedules in the Project Execution Plan for the National Ignition Facility	2.2.a	227.9	278.9
Conducting 3 or 4 subcritical experiments to provide information about the behavior of nuclear materials during the implosion phase of a nuclear weapon	2.3.a	40.1	82.4
Ensuring that the capability to resume underground testing is maintained in accordance with the Presidential Decision Directive and Safeguard C of the CTBT through a combined experimental and test readiness program	3.5.a	144.4	144.1
Maintaining robust emergency response assets in accordance with Presidential Decision Directive 39, the Atomic Energy Act and executive Order 12656 to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad.	3.5.b/c	75.8	78.8
Adhering to schedules for the safe and secure dismantlement of approximately 1,000 nuclear warheads that have been removed from the U.S. nuclear weapon stockpile.	4.1.a	68.9	67.9

³ FY 1999 Congressional Budget Request; Objective N, Strategy N, Performance Measure a-e

DEFENSE PROGRAMS FY 1999 PERFORMANCE PLAN
(Budget Authority Dollars in Millions)

<i>FY 1999 Performance Measure</i>	<i>Budget Reference⁴</i>	<i>FY 1999 Estimate</i>
Meeting all DoD annual weapons alteration, modification and surveillance schedules.	1.1	361.0
Certifying nuclear weapon stockpile safety, reliability and performance according to DOE/DoD procedures	1.3.a 1.3.b	228.4
Beginning the implementation of the dual-path option decision to provide a reliable source of tritium as required for the nuclear weapons stockpile	1.4.a/b	157.0
Completing installation of a 3-trillion operations per second computer system	2.1.b	27.9
Conducting 3 or 4 subcritical experiments to provide information about the behavior of nuclear materials during the implosion phase of a nuclear weapon	2.3.a	82.1
Ensuring that the capability to resume underground testing is maintained in accordance with the Presidential Decision Directive and Safeguard C of the CTBT through a combined experimental and test readiness program	3.5.a	133.2
Maintaining robust emergency response assets in accordance with Presidential Decision Directive 39, the Atomic Energy Act and executive Order 12656 to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad.	3.5.b/c	77.6
Adhering to schedules for the safe and secure dismantlement of approximately 500 nuclear warheads that have been removed from the U.S. nuclear weapon stockpile.	4.1.a	39.1

⁴ FY 1999 Congressional Budget Request; Objective N, Strategy N, Performance Measure a-e

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing. {\$816M}

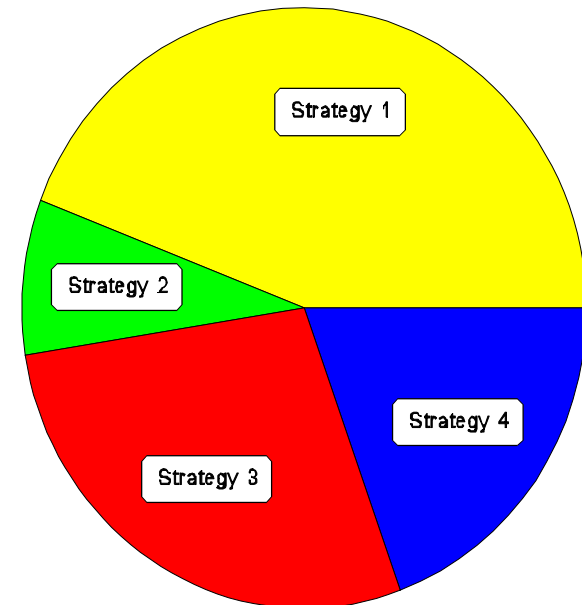
This is the fundamental objective for the Stockpile Stewardship and Management program, and the motivation for DP's rapid shift from test-based to model and simulation-based capabilities to maintain the nation's nuclear weapon stockpile. All DP laboratories and plants are involved in the activities supporting this objective. It is in this objective, through these strategies, where the most fundamental change to Defense Programs has occurred in the past several years. The work with our customer, the Department of Defense, to define the Stockpile Life Extension Program (SLEP) and the Annual Certification process, has helped redefine nuclear deterrence in the post-Cold War era. This objective is accomplished through four main strategies:

1. Extend the life of the U.S. nuclear weapons by continuing the Stockpile Life Extension Program and stockpile maintenance activities. This strategy addresses the need to extend the lifetime of existing warheads. This strategy includes plans for refurbishment options for each weapon system, laid out in the "SLEP" program. To accomplish this, the program also provides a framework for research and development activities, as well as production planning, keyed directly to the nation's needs for maintaining the nuclear weapon stockpile. These options for refurbishments also provide the opportunity to make modifications to improve safety, reliability or longevity. All stockpile life extension activities are closely coordinated with the Department of Defense before they are initiated. This strategy also encompasses work on limited life components.

2. Improve detection and prediction capabilities for assessing nuclear weapon component performance and the effects of aging. Defects and aging-related changes must be identified before they can degrade warhead safety, reliability or performance. To the extent possible, we must predict -- relying on experiments coupled with computer modeling and simulation -- the occurrence and impact of

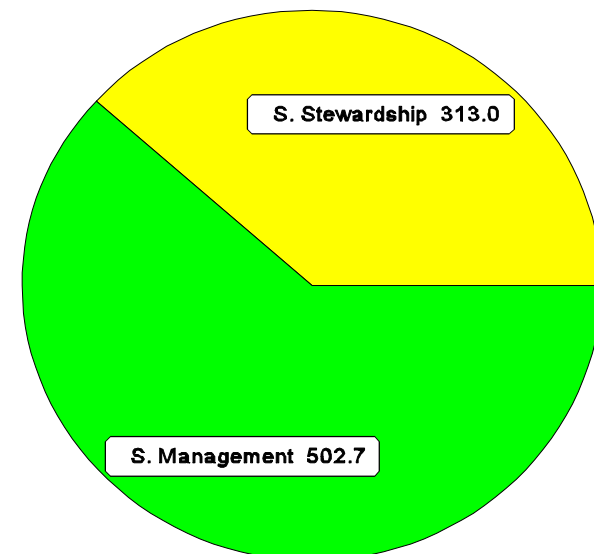
Objective 1: Maintaining Confidence in the stockpile.

Maintaining Confidence in the Stockpile, By Strategy



FY 1999 \$ 816 Million

Maintaining Confidence in the Stockpile, By Decision Unit



changes, both those that have been dealt with previously in stockpile warheads, and changes that have not been encountered. This strategy is implemented mainly through the Enhanced Surveillance Program, a 5-7 year effort begun in 1996 to provide the diagnostic tools and data essential to making significant technological improvements to be integrated into our surveillance programs for the future.

3. Continually evaluate the safety, reliability, and performance of the nuclear weapon stockpile. This strategy embodies the fundamental assessment and analysis activities essential to certifying that the nation's remaining nuclear stockpile is safe and reliable in the absence of nuclear testing. The effects of identified and predicted age- and environment-related changes in stockpile warheads must be assessed, utilizing in large measure advanced numerical simulations and models to determine whether the changes adversely affect safety, reliability, or performance. Determinations as to whether the degradation is severe enough to require the replacement or rebuilding of warhead components or even entire weapons must be made. Evaluation and certification of new materials, new fabrication techniques, and new manufacturing processes are essential to make sure they are functionally equivalent to the originals. The new formal annual certification process is carried out in support of this strategy, as well as Dual Revalidation.

4. Provide a reliable source of tritium as required for the nuclear weapon stockpile by FY 2005 or FY 2007, depending on the production option selected. All nuclear weapons depend on tritium gas to operate successfully. Because tritium radioactively decays at 5.5% per year, it must be replaced periodically in each weapon. Tritium is man-made, and currently the U.S. has no capability to make new gas. The Department has been pursuing a dual track production

strategy for the most promising tritium supply alternatives and expects to make a selection in 1998, of a primary tritium production technology.

A summary matrix of funding by strategy follows; a detailed matrix of funding by Strategy and Budget Structure is provided on the following page.

(Budget Authority Dollars in Millions)

Objective 1	FY 1997	FY 1998	FY 1999
Strategy 1	290.8	287.2	361.0
Strategy 2	55.3	47.6	69.3
Strategy 3	180.1	177.2	228.4
Strategy 4	150.0	260.8	157.0
Total, Objective 1	676.2	772.8	815.7

Objective 1: Maintaining confidence in the stockpile.

**DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST**

**OBJECTIVE 1: Maintain Confidence in the Safety, Reliability, and Performance fo the Nuclear Weapon Stockpile without Nuclear Testing
(Dollars in Thousands)**

STRATEGY:	FY 1997					FY 1998					FY 1999				
	1	2	3	4	Total	1	2	3	4	Total	1	2	3	4	Total
STOCKPILE STEWARDSHIP															
Core Stockpile Stewardship															
Direct Stockpile Activities	143,958	0	10,421	0	154,379	157,524	0	8,882	0	166,406	167,093	0	9,643	0	176,736
Experimental Activities	0	0	22,917	0	22,917	0	0	24,628	0	24,628	0	0	28,364	0	28,364
Accelerated Strategic Computing Initiative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Projects	6,000	0	0	0	6,000	5,359	0	0	0	5,359	4,869	0	0	0	4,869
Performance Assessment Science & Tech'y	1,000	0	26,476	0	27,476	0	0	34,704	0	34,704	0	0	46,244	0	46,244
Systems Components Science & Tech'y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chemistry and Materials Science & Tech'y	0	1,500	0	0	1,500	0	1,515	0	0	1,515	0	1,947	0	0	1,947
Stockpile Computing	0	0	37,034	0	37,034	0	0	28,572	0	28,572	0	0	54,800	0	54,800
Testing Capabilities & Readiness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Laboratory Capital Equipment & General Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Core Stockpile Stewardship	150,958	1,500	96,848	0	249,306	162,883	1,515	96,786	0	261,184	171,962	1,947	139,051	0	312,960
Inertial Confinement Fusion															
Operations & Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Inertial Confinement Fusion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Technology Partnerships	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, STOCKPILE STEWARDSHIP	150,958	1,500	96,848	0	249,306	162,883	1,515	96,786	0	261,184	171,962	1,947	139,051	0	312,960
STOCKPILE MANAGEMENT															
Core Stockpile Management															
Weapons Program	134,339	0	83,332	0	217,671	117,345	0	80,375	0	197,720	168,749	0	89,354	0	258,103
Materials Recycle and Recovery	5,463	0	0	0	5,463	6,970	0	0	0	6,970	9,116	0	0	0	9,116
Production Support	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Safeguards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reconfiguration/Downsizing/Pit Production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infrastructure Programs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plant Capital Equipment & General Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	11,200	0	0	0	11,200
Subtotal, Core Management	139,802	0	83,332	0	223,134	124,315	0	80,375	0	204,690	189,065	0	89,354	0	278,419
Enhanced Surveillance	0	53,762	0	0	53,762	0	46,060	0	0	46,060	0	67,307	0	0	67,307
Adv Manu, Design & Production Technology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Radiological/Nuclear Accident Response															
Operations & Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Rad/NUC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tritium Source															
Operations & Maintenance	0	0	0	150,000	150,000	0	0	0	183,340	183,340	0	0	0	157,000	157,000
Construction	0	0	0	0	0	0	0	0	77,515	77,515	0	0	0	0	0
Subtotal, Tritium Source	0	0	0	150,000	150,000	0	0	0	260,855	260,855	0	0	0	157,000	157,000
Materials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, STOCKPILE MANAGEMENT	139,802	53,762	83,332	150,000	426,896	124,315	46,060	80,375	260,855	511,605	189,065	67,307	89,354	157,000	502,726
WEAPONS PROGRAM DIRECTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, DEFENSE PROGRAMS	290,760	55,262	180,180	150,000	676,202	287,198	47,575	177,161	260,855	772,789	361,027	69,254	228,405	157,000	815,686

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 1: Extend the life of the U.S. nuclear weapons by continuing the Stockpile Life Extension Program and Stockpile Maintenance activities.

The Stockpile Life Extension Process (SLEP) is the new DOE maintenance management strategy that will drive design and manufacturing activities required to maintain the stockpile in a safe and reliable condition. The SLEP process of planning, development and implementation of activities to extend the life of weapons in the enduring stockpile, while maintaining or improving safety and reliability, is continuous and will be applied to all weapon systems in the enduring stockpile. The SLEP systematically reviews the components in all stockpile weapons for possible replacement. The need for component replacements will be based on the likelihood of age-related degradation, coupled with an assessment of the consequences of this degradation.

The Stockpile Life Extension Process provides the framework for research and development activities and production planning. A number of specific life extension options are being defined for each warhead type, allowing the laboratories, plants, and the Department of Defense (DoD) to anticipate and plan for future maintenance and refurbishment requirements. The schedule guides stockpile-related research and development at the laboratories to design and certify replacement components and validate new materials as well as develop and certify new manufacturing processes at the plants. The life extension refurbishment activities also represent opportunities to make additional changes to improve safety, security, or reliability or to make modifications to meet new military requirements. All stockpile life extension activities are closely coordinated with the Department of Defense before they are initiated.

As one of the largest components of the Defense Programs budget, funded by both Stockpile Stewardship and Stockpile Management, this strategy integrates the expertise of both the nuclear weapons laboratories and the production complex. The three nuclear weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia National Laboratories), provide the foundation of development and design expertise that will enable the weapons complex to extend the service life of the U.S. nuclear weapons stockpile and maintain that stockpile in the future. The production complex manufactures or procures components as needed to reassemble, remanufacture, recertify and disassemble weapons to maintain the stockpile and extend its life.

The W87 is the first system to go through the life extension process and will guide future life extension activities for other stockpile warheads. The W87 LEP incorporates design changes to enhance the structural integrity of the warhead. Engineering development is proceeding and includes above ground experiments and high-fidelity flight testing. The effect of the proposed design changes on the warhead's performance is being assessed using the latest computational models, supported by the existing nuclear and nonnuclear test databases and laboratory experiments. The first production unit is scheduled for February 1999.

FY 1997 accomplishments include the completion of preliminary review of potential life extension activities for each weapon, completion of

Objective 1, Strategy 1

development for the W87 LEP and issuance of a completed engineering release for production, completion of two flight tests for the W87 LEP encompassing the production of five joint test assemblies, initiation of process/prove-in activities for the W87 LEP production line, and initiation of disassembly of war-reserve units which will feed the W87 LEP refurbishment line.

Stockpile maintenance and refurbishment activities currently outside the scope of the SLEP, but included under this strategy, are comprised of replacement of Limited Life Component Exchange (LLCE), alterations (Alts.), modifications (Mods), repairs, and retrofit activities that were initiated prior to the SLEP concept. The schedules for these efforts are outlined in the Production and Planning Directives, Master Nuclear Schedule, and Program Control Documents.

A major Stockpile Stewardship effort is the Stockpile Readiness Program, which includes activities on stockpile weapons to maintain or expand the understanding on the original development work, assess current reliability and safety status, respond to design issues and questions, and support the multi-agency Project Officers Group for each weapon system. The other major Stockpile Stewardship effort is the Enduring Stockpile Program, which includes refurbishment efforts like the W87 Life Extension Program (LEP) to continue the development work necessary to support first production and certification in FY 1999; performance will be measured by meeting the schedule for the W87 certification in FY 1999.

The Future Stockpile Program includes activities directed toward possible future stockpile modifications such as the Submarine Launched Ballistic Missile (SLBM) Warhead Protection Program (WPP), a cooperative program between the Navy and DOE to exercise and maintain expertise for SLBM systems and to demonstrate replacement warhead options for possible future deployment, if needed.

Success for stockpile maintenance activities is measured by the adherence to schedules for the delivery of gas generators, filled tritium reservoirs, recertified neutron generators, and production of new neutron generators and electrical power sources as defined in the directive schedules. Key stockpile refurbishment activities for FY 97-FY 99 include the B61 Alt 335, 336, and 339; B61-11; W76 Acorn; W87 LEP Alt 342; and the B83 Quality Improvement Program (QIP).

PERFORMANCE MEASURE for Objective 1, Strategy 1 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Meet all scheduled deliveries for stockpile maintenance, surveillance, assessment, and as appropriate, refurbish specific warheads as set forth in the classified Production and Planning Directive.	\$ 267,938	\$ 263,867	\$ 333,930
OTHER FUTURE STOCKPILE ACTIVITIES.	\$ 22,822	\$ 23,331	\$ 27,097
Total, Objective 1, Strategy 1	\$ 290,760	\$ 287,198	\$ 361,027

Objective 1, Strategy 1

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 1: Extend the life of the U.S. nuclear weapons by continuing the Stockpile Life Extension Program and Stockpile Maintenance activities.

Performance Measure A: Meet all scheduled deliveries for stockpile maintenance, surveillance, assessment, and as appropriate, refurbish specific warheads as set forth in the classified Production and Planning Directive.

The DOE must maintain the weapons stockpile with a capability to design, develop, and produce components in support of fielded weapons systems. Thus, the DOE must continue to supply Limited Life Component Exchanges (LLCEs) and stockpile repairs; and refurbish all nuclear weapons in the stockpile to support the Stockpile Life Extension Program (SLEP).

The LLCE program includes all activities necessary to procure, fabricate, and assemble parts into weapon components that will be used to replace like components having a limited life. Alterations, modifications, repairs, and other support activities include procurement, fabrication, and assembly of piece parts and components necessary to maintain the enduring stockpile and to provide base spares (spare parts for the DoD). The stockpile maintenance activities at each site are responsive to the directive schedules for maintenance and LLCEs for all systems in the enduring stockpile, to include scheduled weapons refurbishment activities in support of SLEP.

Historically, many of these components were produced at the production plants particularly at the Mound, Pinellas and Rocky Flats Plants. Under the Department's nonnuclear reconfiguration program, the Defense Programs mission at these sites was shut down and the production functions were transferred to the laboratories and other production sites, namely the Los Alamos and Sandia National Laboratories and the Savannah River Site and the Kansas City Plant. The limited life component production capacity of the reconfigured complex was based on a START II stockpile level, consistent with workload guidance issued at that time. In order to meet production capacity required to support a START I stockpile level or to allow a return to START I levels, a total capital investment of \$27 million (FY 99 \$11.2 million, FY 00 \$15.8million) is required for facility modifications and additional equipment to support the additional capacity requirements. There are also additional operating expense requirements associated with this effort totaling \$14.7 million in FY 1999.

Stockpile maintenance, surveillance, assessment, and refurbishment activities are jointly funded by the Stockpile Stewardship and Stockpile Management Programs and are carried out across the Nuclear Weapons Complex. The Stockpile Management activities are included in the Weapons Program element of the work breakdown structure while the Stockpile Stewardship activities are included in the Direct Stockpile and Special Projects Program elements.

All LLCE schedules will be supported for FY 1999. Kansas City will focus on first production unit reservoirs for the B61 and W88 and will continue efforts for production of reservoirs for the W76, W78, W80, and W87; and reservoir/neutron generator/parachute change out kits. Los Alamos

Objective 1, Strategy 1

National Laboratory will deliver beryllium inserts for the W88 Terrazzo, neutron tube targets, mock pits for Joint Test Assemblies, and high power detonators. Sandia National Laboratories will continue startup and preproduction efforts for the W76 neutron generator. Savannah River will support the loading and unloading of reservoirs, packaging, shipping and reclamation of reservoirs, and the processing of reservoir squib valves, and actuators.

Major refurbishment activities for FY 1999 include the B83 upgrade and the W87 LEP. Scheduled work also includes the B61 Alt 335, 336 and 339, and W76 Alt 317. The B61 Alts, W76 Alts, and B83 upgrade are ongoing from FY 1997, while the production phase of the W87 LEP is scheduled to begin in FY 1999.

The Stockpile Readiness Program, funded by Stockpile Stewardship, includes activities on stockpile weapons to maintain or expand the understanding on the original development work, assess current reliability and safety status, respond to design issues and questions, and support the multi-agency Project Officers Group for each weapon system. The Enduring Stockpile Program, also funded by Stockpile Stewardship, includes refurbishment efforts like the W87 Life Extension Program (LEP) to continue the development work necessary to support first production and certification in FY 1999; performance will be measured by meeting the schedule for the W87 certification in FY 1999. These Stockpile Stewardship activities are carried out by the three nuclear weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia National Laboratories).

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Deliveries for stockpile maintenance (LLCE components support).	\$ 40,171	\$ 43,807	\$ 76,723
Deliveries for stockpile refurbishment.	\$ 94,168	\$ 73,538	\$ 103,226
Support for the Stockpile Readiness Program.	\$ 32,384	\$ 42,060	\$ 46,438
Support for the Enduring Stockpile Program.	\$ 88,752	\$ 92,133	\$ 93,558
Materials Recycle and Recovery.	\$ 5,463	\$ 6,970	\$ 9,116
Special Projects - DoD/DOE Munitions MOU.	\$6,000	\$ 5,359	\$ 4,869
Performance Assessment Science and Technology.	\$1,000	\$ 0	\$ 0
Total, Objective 1, Strategy 1, Performance Measure A	\$ 267,938	\$ 263,867	\$ 333,930

Objective 1, Strategy 1

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.
Strategy 1: Extend the life of the U.S. nuclear weapons by continuing the Stockpile Life Extension Program and Stockpile Maintenance activities.

Other Future Stockpile Activities:

The design and development work on future stockpile systems or modifications is conducted by the Future Stockpile Program, funded by Stockpile Stewardship. This program includes activities directed toward possible future stockpile modifications such as the Submarine Launched Ballistic Missile (SLBM) Warhead Protection Program (WPP), a cooperative program between the Navy and DOE to exercise and maintain expertise for SLBM systems and to demonstrate replacement warhead options for possible future deployment, if needed. These Stockpile Stewardship activities are carried out by the three nuclear weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia National Laboratories).

Key success measurements for these activities are the programs which demonstrate the continued capability at the laboratories to design warhead modifications or replacement options such as the recent B61-11 effort.

SUPPORTING ACTIVITIES (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Support for the Future Stockpile Program.	\$ 22,822	\$ 23,331	\$ 27,097
Total, Objective 1, Strategy 1, Other future stockpile activities	\$ 22,822	\$ 23,331	\$ 27,097

Objective 1, Strategy 1

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 2: Improve detection and prediction capabilities for assessing nuclear weapon component performance and the effects of aging.

This strategy is essential to providing advanced predictive capability to measure and calculate the effects of aging on weapons components and to extend the reliability, safety, and performance of existing weapons beyond their original design life. Implemented mainly through the Enhanced Surveillance Program (ESP), the strategy seeks to extend the capability for proactive component and/or material replacement. Successful completion of key activities under this 5-7 year program will provide the diagnostic tools and data essential to advance warning of stockpile defects, which is essential to Stockpile Life Extension Program planning.

The Enhanced Surveillance Program Plan, issued by Headquarters and updated on an annual basis, includes 10 focus areas consisting of tasks with detailed schedules, milestones, and deliverables. Each task description also includes site participants, required site funding, risk assessment, and discussion of leveraged work funded through other sources.

The Enhanced Surveillance Program is carried out at the DOE weapon production plants and design laboratories - the Kansas City Plant, Y-12 Plant, Savannah River Site, Pantex Plant, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Sandia National Laboratories. There are strong coordination and teaming between the laboratories and production sites for planning, selection, and conduct of research projects for this program.

In FY 97, the program introduced new testing for measuring performance changes in high explosives with age. The program continued the evaluation of safety and reliability critical nonnuclear components to determine lifetimes. New gas sampling, mechanical testing, and sensors were introduced to detect changes in materials and structures. ESP enabled enhanced fidelity instrumented flight testing, allowing flight tests to produce additional and more accurate flight data with a higher degree of realism than ever achieved before. ESP's advanced analysis of data collected during weapon production resulted in the prediction of age-dependant defects in the stockpile. The program also sponsored experiments providing data supporting the determination of the equations of state of plutonium and to estimate the lifetime of the material.

Funding for this strategy is provided mainly by Stockpile Management; however, there are some supporting activities within Stockpile Stewardship that provide for studies, engineering development, and technology demonstration in the area of tritium.

Key activities for FY 1997 - FY 1999 include the development of enhanced diagnostics for materials and component characterization and surveillance, materials aging model development, systems performance model development, and enhanced systems testing.

Objective 1, Strategy 2

PERFORMANCE MEASURES for Objective 1, Strategy 2 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Adhere to schedules set forth in the Enhanced Surveillance Program Plan for activities that enhance knowledge of weapon-relevant physical processes affecting aging and operation of weapon components.	\$ 55,262	\$ 47,575	\$ 69,254
Total, Objective 1, Strategy 2	\$ 55,262	\$ 47,575	\$ 69,254

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 2: Improve detection and prediction capabilities for assessing nuclear weapon component performance and the effects of aging.

Performance Measure A: Adhere to schedules set forth in the Enhanced Surveillance Program Plan for activities that enhance knowledge of weapon-relevant physical processes affecting aging and operation of weapon components.

This performance measure is essential to measure progress in developing tools, techniques and models that will provide advanced capabilities to measure, analyze, calculate and predict the effects of aging on weapons materials and components. As these technologies and methods are prototyped and validated, they will be integrated into the core stockpile surveillance process discussed in Objective 1 Strategy 3.

Funding for this performance measure is provided mainly by Enhanced Surveillance Program element of the Stockpile Management work breakdown structure; however, there are some supporting activities included in the Chemistry and Materials element within Stockpile Stewardship that provide for tritium studies, engineering development, and technology demonstration.

Key activities for FY 1999 focus on pits, high explosives and initiation systems, organics, dynamics, diagnostics, system level interactions, secondaries, nonnuclear materials, nonnuclear components and subsystems, and upgrades to the routine surveillance testing program.

All deliverables are defined in the Enhanced Surveillance Program Plan. Specific FY 1999 deliverables include tests for precision, performance, standards, and divergence in high explosives; advance surveillance hydrodynamic tests; new radiography, gas analysis, and endoscopy diagnostics; advanced flight test hardware; plutonium and uranium stability and performance tests; materials surveillance tests and models; and system surveillance tools and models.

Success for FY 1999 is demonstrated by the completion of the above activities that contribute to develop ESP techniques. The products support

Objective 1, Strategy 2

definition and determination of parameters for improved computational models, new sensors to detect material failure, numerical simulations, and improved access to and analysis of archived data. These products provide the technical basis to assess the performance and the effects of aging for all nuclear and nonnuclear weapons components in the existing stockpile.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Delivery of diagnostic tools for surveillance of nuclear components	\$14,037	\$10,670	\$19,260
Delivery of diagnostic tools for surveillance of nonnuclear components	\$16,652	\$18,391	\$20,544
Delivery of predictive capabilities for nuclear components	\$13,123	\$11,563	\$15,134
Delivery of predictive capabilities for nonnuclear components	\$9,950	\$5,436	\$12,369
Conduct tritium studies	\$1,500	\$1,515	\$1,947
Total, Objective 1, Strategy 2, Performance Measure A.	\$55,262	\$47,575	\$69,254

Objective 1, Strategy 2

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 3: Continually evaluate the safety, reliability, and performance of the nuclear weapons stockpile.

A primary responsibility of the Department of Energy is to certify the safety and reliability of the Nation's nuclear weapons stockpile. This responsibility was reaffirmed in the Nuclear Posture Review and spelled out as a safeguard to U.S. participation in the Comprehensive Test Ban Treaty (CTBT). In the absence of nuclear testing, different experiments and tools must be relied upon to obtain data relevant to nuclear warhead performance. Older tools that were designed to complement nuclear testing including surveillance testing and evaluation, new material laboratory tests/stockpile laboratory tests, new material flight tests/stockpile flight tests, surety assessments, weapons reliability reports, weapons appraisals, safety evaluations, and simulation codes and databases are being used today. However, since these capabilities were developed to complement nuclear testing, they are not, in and of themselves, sufficient in the absence of nuclear testing. As such, a suite of enhanced experimental capabilities has been identified that will ultimately provide high-resolution data on the stages of nuclear explosion-primary implosion, boost, primary to secondary coupling, and weapon effects. These advanced capabilities focus on areas such as computations and simulations, hydrodynamics, radiography, subcritical experiments, laser technology, pulsed power, and particle acceleration, and are discussed under Objective 2. As these new facilities and capabilities come on line and are validated, their data will be incorporated into our assessments. This transition period should take several more years. Today, we must base the certification of our stockpile on surveillance, experiments, calculations, peer review, the results of previous nuclear testing, and the scientific understanding and expert judgment of senior officials within the DOE and the DoD.

In 1995, the President requested a new annual certification process to document that the Nation's remaining nuclear stockpile is safe and reliable in the absence of underground nuclear testing. A formal annual certification process has been established which incorporates technical evaluation and advice from senior officials of the weapons laboratories as well as the DOE and DoD. Activities which support the annual certification process are funded in the Stockpile Stewardship and Stockpile Management programs.

Dual Revalidation of the nuclear weapons stockpile is a robust form of peer review designed to assure that the stockpiled systems remain safe, secure, and reliable and continue to meet military requirements. In this program, individual weapon types are reviewed by two independent review teams (one from the weapons laboratory that originally designed the weapon and the other from the other weapons design laboratory). The result will be a modern baseline of the weapon and an evaluation of its current performance. Dual Revalidation is funded in the Stockpile Stewardship program. Revalidation of the W76 was initiated in FY 1996 and is scheduled to conclude in FY 1999. Revalidation of a second weapon type, yet to be specified, will commence at that time.

The ultimate measure of success for the Stockpile Stewardship Program is the certification that the stockpile is safe and reliable without a recommendation to the President that nuclear testing is required.

Objective 1, Strategy 3

PERFORMANCE MEASURES for Objective 1, Strategy 3 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Certify that standards for the safety, reliability, and performance of the nuclear weapons stockpile are met.	\$ 166,530	\$ 162,029	\$ 213,405
B. Revalidate the military characteristics of the W76 warhead in FY 1999 and begin revalidation of a second weapon type.	\$ 13,650	\$ 15,132	\$ 15,000
Total, Objective 1, Strategy 3	\$ 180,180	\$ 177,161	\$ 228,405

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 3: Continually evaluate the safety, reliability and performance of the nuclear weapons stockpile.

Performance Measure A: Certify that standards for the safety, reliability, and performance of the nuclear weapons stockpile are met.

Evaluation of the safety, reliability and performance of the nuclear weapons stockpile has been a major component of the U.S. nuclear weapons program ever since the first weapons were put into the stockpile. Approximately 14,000 weapons have been examined and subjected to a variety of nonnuclear laboratory experiments and flight tests since 1958. In cases where these tests could not provide conclusive answers, nuclear tests of stockpile warheads or warhead components were conducted; however, without nuclear weapon testing, we must now base the certification of our stockpile on surveillance, experiments, calculations, peer review, and the results of previous nuclear testing. Stockpile safety, reliability, and performance issues are continually assessed by the Department. As part of the Stockpile Stewardship and Management Program, a formal annual certification process has been established which includes technical evaluations and input from the directors of the weapons laboratories, DOE, and DoD, including the Commander in Chief of the Strategic Command and the Nuclear Weapon Council.

Activities which support this process include surveillance testing and evaluation, new material laboratory tests/stockpile laboratory tests, new material flight tests/stockpile flight tests, surety assessments; weapons reliability reports; weapons appraisals; and safety evaluations. Weapon assessments are based on the technical judgment of skilled personnel, using the best available information from the nuclear test database, above ground experiments, and detailed calculations using simulation codes validated against relevant experimental results. Advanced computation capabilities developed in the ASCI program are integrated with these efforts.

Objective 1, Strategy 3

The ongoing stockpile surveillance program provides assurance that stockpile weapons conform to design and reliability requirements throughout production and stockpile life. This is accomplished through the planning and execution of yearly system-level laboratory and flight test programs for each weapon type in the enduring stockpile. Laboratory tests are conducted at the Weapon Evaluation Test Facility, a Sandia-operated facility located at Pantex. Both laboratory and flight tests are designed to detect defects in the stockpile and verify continued compatibility with the delivery system. The number of tests for a specific weapon type is selected to provide a 90 percent probability of detecting a problem that would affect more than 10 percent of that weapon type within a 2-year period of time. Data from these tests are also used to calculate the reliability of each weapon type in the enduring stockpile.

Maintenance of nuclear safety requires the continual monitoring, assessment, analysis, and evaluation of the relationship between the design, age, and overall condition of the stockpile, and the resulting safety of the stockpile. To ensure nuclear safety, the maintenance of safety monitoring, review, assessment, and evaluation functions remain separate from, and independent of, the weapon design and stockpile maintenance processes. The independent assessment activities include support to DOE Nuclear Explosive Safety Studies, studies sponsored by the DoD Nuclear Weapon System Safety Group, quantitative risk assessments and the development of supporting methods, internal independent weapon surety assessment efforts, surety training, the development of internal programs to ensure compliance with customer requirements, and special independent weapon system assessment studies requested by DOE and/or DoD. Records and results of studies, tests, analyses, and assessment positions are maintained in an electronic database retrieval system for future reference.

Successful performance will be demonstrated by formal certification that the stockpile is safe and reliable and that there is no need to conduct an underground nuclear test.

Activities in support of certification utilize most capabilities at the laboratories and plants. As such, these activities are jointly funded in the Direct Stockpile Activities, Experimentation, Accelerated Strategy Computing Initiative, and Performance Assessment Science & Technology elements of the Stockpile Stewardship program and in the Weapons Program element of the Stockpile Management program. These activities are carried out across the weapons complex.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Conduct new material laboratory tests/stockpile laboratory tests.	\$12,824	\$ 22,324	\$ 21,952
Conduct new material flight tests/stockpile flight tests.	\$ 25,496	\$ 33,008	\$ 25,019
Conduct surveillance testing.	\$ 45,012	\$ 25,043	\$ 42,383

Objective 1, Strategy 3

Conduct hydrotest experiments in support of certification.	\$ 7,494	\$10,054	\$ 10,835
Conduct technical review of stockpile weapons including evaluation of surveillance results, weapons appraisals, safety evaluations, surety assessments, and reliability reports.	\$ 34,223	\$ 37,883	\$ 49,809
Perform weapon simulation/calculations in support of certification.	\$ 37,034	\$ 28,572	\$ 54,800
Archiving of nuclear design database and data for nuclear weapon analysis.	\$ 4,447	\$ 5,145	\$ 8,607
Total, Objective 1, Strategy 3, Performance Measure A	\$ 166,530	\$ 162,029	\$ 213,405

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.
Strategy 3: Continually evaluate the safety, reliability, and performance of the nuclear weapons stockpile.

Performance Measure B: Revalidate the military characteristics of the W76 warhead in FY 1999 and begin revalidation of a second weapon type.

Dual Revalidation of the nuclear weapons stockpile is a robust form of peer review designed to assure that the stockpiled systems remain safe, secure, and reliable and continue to meet military requirements. The W76 is being reviewed by two independent review teams, an original design team (members from Los Alamos and Sandia National Laboratories) and an independent review team (members from Lawrence Livermore and Sandia National Laboratories). The result will be a modern baseline of the weapon, an evaluation of its current performance and a new generation of stockpile stewards trained in its operation. Revalidation of the W76 was initiated in FY 1996 and will conclude in FY 1999. Revalidation of a second weapon type, yet to be specified, will commence at that time.

Weapons designers, engineers and chemists are performing calculations with modern simulation tools and are planning and executing a variety of system and component level tests to study specific features of the W76 warhead, particularly those that may be affected by aging. Their goal is to establish a modern baseline for the W76 by assessing and evaluating its performance against revalidated military requirements. At the conclusion of the study, a report will be written to summarize results and conclusions.

The Dual Revalidation Program is executed in partnership with DoD through the Project Officers Group framework. The program includes archival of existing data, collection and evaluation of all surveillance data, and analysis of weapon performance using existing computer codes and experimental facilities. Current results will be compared with results from previous calculations and tests.

Objective 1, Strategy 3

Performance in FY 1999 will be measured by completion of the W76 tests, evaluations and analysis and the commencement of the revalidation of a second weapon type, yet to be specified, using the lessons learned from the W76 process.

Dual Revalidation is funded by Core Stockpile Stewardship's Direct Stockpile Activities and Performance Assessment Science & Technology.

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Revalidation activities by team members from Lawrence Livermore National Laboratory.	\$ 5,450	\$ 5,013	\$ 6,000
Revalidation activities by team members from Los Alamos National Laboratory.	\$ 5,700	\$ 7,719	\$ 6,600
Revalidation activities by team members from Sandia National Laboratories.	\$ 2,500	\$ 2,400	\$ 2,400
Total, Objective 1, Strategy 3, Performance Measure B.	\$ 13,650	\$ 15,132	\$ 15,000

Objective 1, Strategy 3

OBJECTIVE 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

Strategy 4: Provide a reliable source of tritium as required for the nuclear weapons stockpile by FY 2005 or FY 2007 depending on the production option selected.

All U.S. nuclear weapons depend on tritium, a radioactive isotope of hydrogen. The proper quantity of tritium in a nuclear weapon is critical for the weapon to perform properly. Tritium decays radioactively at a rate of 5.5 percent each year, and must be periodically replenished in U.S. nuclear weapons. Tritium is extremely rare in nature and therefore must be man-made to obtain the quantities needed to supply the U.S. nuclear weapons stockpile. The U.S. has no current capability to product tritium. DOE is currently required to develop production capacity by 2005/2007 to maintain the nuclear weapons stockpile. Currently, nuclear reactors and proton accelerators are the only practical methods of producing sufficient quantities of tritium.

The Secretary of Energy issued a Record of Decision for the Tritium Supply and Recycling Final Programmatic Environmental Impact Statement on December 5, 1995. That Record of Decision announced a plan to pursue a dual track production scenario to ensure an adequate tritium supply, which authorized work to 1) initiate the purchase of an existing commercial reactor or irradiation services with an option to purchase the reactor for conversion to a defense facility; and 2) design, build, and test critical components of an accelerator system for tritium production. The Department plans to select one of the tracks in 1998 to serve as the primary source of tritium. The non-selected technology will be developed as a backup capability. For the CLWR, developing backup capability includes all elements of the CLWR project except actual irradiation in a commercial reactor and radioactive operations at the new tritium extraction facility. For the APT, developing backup capability includes design, development, and demonstration activities sufficient to allow the APT to be constructed in the future on relatively short notice.

The FY 1999 budget request includes \$157.0 million to pursue the option that is selected. If the purchase of irradiation services from commercial light water reactors is selected as the primary option, the budget request will be sufficient to meet current requirements. If the Department selects accelerator production of tritium as the primary option, it will need to seek relief from the current target date for initiating new tritium production or request additional funding.

PERFORMANCE MEASURES for Objective 1, Strategy 4 (\$ in Thousands)	FY 1997	FY 1998	FY 1999*
A. Perform the scheduled supporting activities to allow tritium production in a commercial reactor beginning in FY 2003 and tritium extraction operations beginning by FY 2005.	\$ 27,500	\$ 61,739	TBD
B. Perform the scheduled supporting activities to allow tritium production in the APT by FY 2007; specifically continue engineering development and demonstration activities, complete preliminary design, begin detailed design, and initiate site preparation.	\$ 122,500	\$ 199,116	TBD
Total, Objective 1, Strategy 4	\$ 150,000	\$ 260,855	\$157,000 **

* The FY 1999 budget request includes \$157.0 million to pursue the option that is selected. If the purchase of irradiation services from commercial light water reactors is selected as the primary option, the budget request will be sufficient to meet current requirements. If the Department selects accelerator production of tritium as the primary option, it will need to seek relief from the current target date for initiating new tritium production or request additional funding.

** Allocations will be developed based upon results of technology decision expected in 1998.

A detailed budget justification for the \$157 million request will be submitted following the technology decision.

Objective 1, Strategy 4

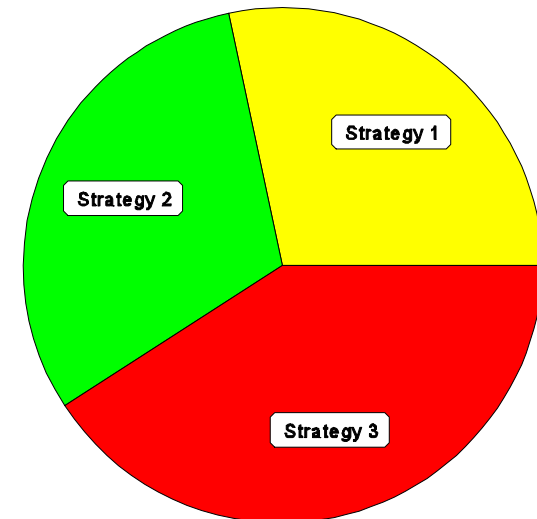
OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program {1,423M}

The CTBT, which was signed by the President on September 24, 1996 and submitted to the Senate for ratification on September 23, 1997, prohibits nuclear testing unless the "supreme national interest" clause is invoked. In pursuing the CTBT, the President has expressed his confidence in the ability of Defense Programs to maintain the U.S. nuclear deterrent without nuclear testing. This confidence is due to the development and implementation of the science-based Stockpile Stewardship and Management Program which was started in 1992. This objective is accomplished through three main strategies:

1. Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of nuclear testing. Computational modeling and prediction are integral to every activity in the Stockpile Stewardship and Management Program, from the assessments of aging-related changes, to the design and certification of replacement components, to stockpile life extension projects. Advanced computational capabilities (application codes, computing platforms, and various tools and techniques) are being developed under the Accelerated Strategic Computing Initiative (ASCI) and will be incorporated into ongoing stockpile computational activities. ASCI integrates the resources of the national laboratories, computer manufacturers, and academia.

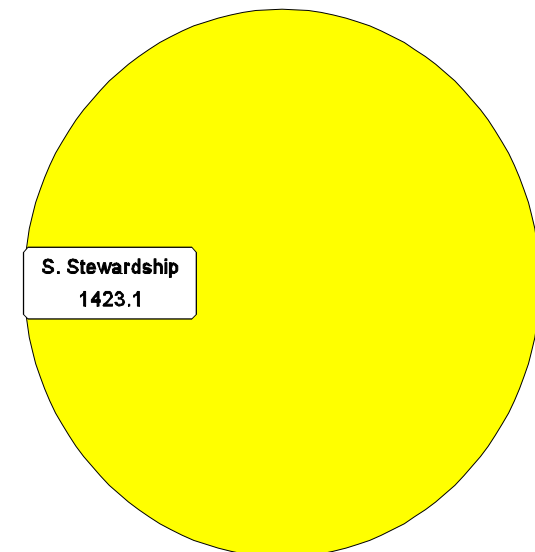
2. Develop new nuclear weapons physics experimental test capabilities. In addition to the current experimental program within the Stockpile Stewardship and Management Program, two new nonnuclear experimental facilities are under construction. The Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility will be the nation's most advanced facility for hydrodynamic experiments. These experiments are essential for validating the implosion performance of primaries. The National Ignition Facility (NIF) at Lawrence Livermore National Laboratories will provide a means for studying primary boosting and

Replace testing with a SBSS program, By Strategy



FY 1999 \$ 1,423 Million

Replace Testing with a SBSS Program, By Decision Unit



Objective 2: Replace Nuclear Testing with a Science-based Stockpile Stewardship & Management Program

will also provide important data for assessment of secondary performance and weapons effects and for improving and validating new physics models and computer codes. Defense Programs is also investigating the feasibility of two follow-on facilities for advanced hydrodynamic radiography and advanced pulsed power.

3. Advance our understanding of the fundamental characteristics of weapons behavior through weapon systems engineering and advanced experiments to support future assessments of weapons safety, reliability, and performance.

An integrated experimental and theoretical research program is essential to improve our understanding of the underlying nuclear weapon science. Ongoing experiments at existing aboveground facilities continue to address the basic physics phenomena and provide data to improve our modeling and simulation capabilities. Subcritical experiments conducted at the Nevada Test Site are providing vital scientific information that will improve our prediction capabilities about the performance of stockpile warheads as they age.

A summary matrix of funding by strategy follows; a detailed matrix of funding by Strategy and Budget Structure is provided on the following page.

(Budget Authority Dollars in Millions)

Objective 2	FY 1997	FY 1998	FY 1999
Strategy 1	205.4	289.5	404.7
Strategy 2	247.2	369.8	439.6
Strategy 3	560.3	569.2	578.8
Total, Objective 2	1,012.9	1,228.5	1,423.1

Objective 2: Replace Nuclear Testing with a Science-based Stockpile Stewardship & Management Program

DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
OBJECTIVE 2: Replace Nuclear Testing with a Science-Based Stockpile Stewardship and Management Program
(Dollars in Thousands)

STRATEGY:	FY 1997				FY 1998				FY 1999			
	1	2	3	Total	1	2	3	Total	1	2	3	Total
STOCKPILE STEWARDSHIP												
Core Stockpile Stewardship												
Direct Stockpile Activities	0	0	0	0	0	0	0	0	0	0	0	0
Experimental Activities	0	0	0	0	0	0	0	0	0	0	0	0
Accelerated Strategic Computing Initiative	145,115	0	0	145,115	208,029	0	0	208,029	315,600	0	0	315,600
Special Projects	0	0	14,461	14,461	0	0	11,737	11,737	0	0	11,233	11,233
Performance Assessment Science & Tech'y	0	19,300	155,303	174,603	0	44,620	164,923	209,543	0	49,000	188,232	237,232
Systems Components Science & Tech'y	0	0	100,248	100,248	0	0	109,610	109,610	0	0	82,128	82,128
Chemistry and Materials Science & Tech'y	0	0	49,546	49,546	0	0	44,200	44,200	0	0	43,664	43,664
Stockpile Computing	60,245	0	57,866	118,111	81,449	0	40,539	121,988	87,300	0	44,800	132,100
Testing Capabilities & Readiness	0	0	30,382	30,382	0	0	52,246	52,246	0	0	61,965	61,965
Laboratory Capital Equipment & General Plant	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	15,100	15,100	0	46,300	13,400	59,700	1,800	36,000	6,400	44,200
Subtotal, Core Stockpile Stewardship	205,360	19,300	422,906	647,566	289,478	90,920	436,655	817,053	404,700	85,000	438,422	928,122
Inertial Confinement Fusion												
Operations & Maintenance	0	96,032	137,375	233,407	0	81,100	132,554	213,654	0	70,400	140,400	210,800
Construction	0	131,900	0	131,900	0	197,800	0	197,800	0	284,200	0	284,200
Subtotal, Inertial Confinement Fusion	0	227,932	137,375	365,307	0	278,900	132,554	411,454	0	354,600	140,400	495,000
Technology Partnerships	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, STOCKPILE STEWARDSHIP	205,360	247,232	560,281	1,012,873	289,478	369,820	569,209	1,228,507	404,700	439,600	578,822	1,423,122
STOCKPILE MANAGEMENT												
Core Stockpile Management												
Weapons Program	0	0	0	0	0	0	0	0	0	0	0	0
Materials Recycle and Recovery	0	0	0	0	0	0	0	0	0	0	0	0
Production Support	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Safeguards	0	0	0	0	0	0	0	0	0	0	0	0
Reconfiguration/Downsizing/Pit Production	0	0	0	0	0	0	0	0	0	0	0	0
Infrastructure Programs	0	0	0	0	0	0	0	0	0	0	0	0
Plant Capital Equipment & General Plant	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Core Management	0	0	0	0	0	0	0	0	0	0	0	0
Enhanced Surveillance	0	0	0	0	0	0	0	0	0	0	0	0
Adv Manu, Design & Production Technology	0	0	0	0	0	0	0	0	0	0	0	0
Radiological/Nuclear Accident Response												
Operations & Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Rad/NUC	0	0	0	0	0	0	0	0	0	0	0	0
Tritium Source												
Operations & Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Tritium Source	0	0	0	0	0	0	0	0	0	0	0	0
Materials	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, STOCKPILE MANAGEMENT	0	0	0	0	0	0	0	0	0	0	0	0
WEAPONS PROGRAM DIRECTION	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, DEFENSE PROGRAMS	205,360	247,232	560,281	1,012,873	289,478	369,820	569,209	1,228,507	404,700	439,600	578,822	1,423,122

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program.

Strategy 1: Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of nuclear testing.

In support of the need to shift from largely test-based to largely model-based assessment and certification of the stockpile by FY 2004, the Defense Programs laboratories will conduct integrated, strategic computing programs containing the elements of the Accelerated Strategic Computing Initiative (ASCI), Stockpile Computing (SC), Code Verification and Validation (V&V), Distance Computing and Distributed Computing (DISCOM²) and Numerical Environment for Weapons Simulation (NEWS).

To meet its near and long-term certification and assessment responsibilities for the aging nuclear weapons stockpile in the absence of nuclear testing, the laboratories rely on accurate, detailed, experimentally-validated computational models of weapon performance and safety. Simulation and modeling activities include support of current production codes and the associated computer facility operations, and the advanced program funded by the ASCI designed to provide major improvements in capability.

One of the biggest technical challenges facing the Stockpile Stewardship and Management Program is the development of predictive three-dimensional simulation and modeling codes needed to evaluate the aging stockpile from both engineering and physics perspectives. The physical resolutions needed for these simulations, roughly a billion zones, will require at least 100 trillion floating point operations per second (100 Tf) peak operational speed and 30 terabytes of computer memory by 2004.

The DOE, the three weapons laboratories, alliance universities and the high-end computer industry have committed to partnerships under ASCI, to develop, in less than a decade, the tera-scale technology needed to perform three-dimensional modeling and simulation that will integrate the essential elements of science-based Stockpile Stewardship. Progress in achieving these goals is assessed annually. Relative success is based on performance measured as the percentage of annual milestones accomplished from that year's integrated DP Simulation and Modeling Implementation Plans.

PERFORMANCE MEASURES for Objective 2, Strategy 1 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Accelerate the ongoing development of critical, full-physics, three-dimensional weapons simulation codes, specifically perform sustained weapons simulations at 1 trillion operations per second.	\$ 185,360	\$ 194,668	\$ 322,400
B. Complete the installation of a three trillion operations per second computer system.	\$ 0	\$ 58,250	\$ 27,900
OTHER NEXT GENERATION OF SUPERCOMPUTING ACTIVITIES	\$ 20,000	\$ 36,560	\$ 54,400
TOTAL, Objective 2, Strategy 1	\$ 205,360	\$ 289,478	\$ 404,700

Objective 2, Strategy 1

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program.

Strategy 1: Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of nuclear testing.

Performance Measure A: Accelerate the ongoing development of critical, full-physics, three-dimensional weapons simulation codes, specifically perform sustained weapons simulations at 1 trillion operations per second.

The ASCI applications code strategy has many elements including: simulation code development and maintenance; improving the science base; code team development at the labs, and development of programmatic verification / validation processes. Applications Code acceleration deliverables / milestones for FY 1999 are:

- Preliminary full system capability, with a subset of planned physics options, for two new integrated 3D performance codes which use different approaches to the basic mesh structure, each representing promising approaches with differing accuracy / speed trade-offs,
- Operational safety / manufacturing code capable of high resolution simulations of weapon response to abnormal environments, compatible with initial ASCI platforms.
- Run three 3-D applications codes with advanced material property models, including aging effects, on the Option Blue computer.
- Deploy to designers entirely new advanced simulation capability in the areas of: detailed massively parallel structural dynamics; advanced electromagnetic tool-set with "multi-scale" physics; and a next-generation, fully-coupled, fire code.
- Deploy accurate computational models for more complex materials and geometries used in solid-dynamics simulations of weapon component performance algorithms for steering computational material design and analysis, and tightly-coupled multi-physics algorithms and numerical solvers.
- Joint Computational Engineering Laboratory (99-D-107) at SNL will be a new state-of-the-art facility for research, development, and application of leading edge, high-end computational and communications technologies

Development and application of these 3D codes requires a powerful problem solving environment, including system software for debugging and performance monitoring, high speed network connectivity, very large data storage capacity, and software packages for setting up problems and visualizing results. Also requiring accelerated development is a system to permit secure seamless communication of large volumes of data at very high speed and on-line computing among the national laboratories and plants.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Run six ASCI 3-D codes, 2 performance and 1 safety/ manufacturing code per Lab, on Blue Machine.	\$ 49,596	\$ 65,251	\$ 86,300
Validate new safety / manufacturing code by modeling key safety experiments.	\$ 0	\$ 0	\$ 25,000

Objective 2, Strategy 1

Provide elements of tri-lab computing environment, including prototype applications operating in distributed mode, and a unified high performance storage system.	\$ 35,994	\$ 28,178	\$ 36,500
Vertically integrate solid modeling, meshing, parallel decomposition, analysis, and visualization tools.	\$ 37,865	\$ 19,000	\$ 58,200
Implement an initial problem solving environment to support developmental application of ASCI and nuclear weapons production and support codes.	\$ 21,660	\$ 17,100	\$ 50,200
Perform simulation code development and validation and continue improvements in 3-D full physics modeling.	\$ 40,245	\$ 65,139	\$ 64,400
Initiate efforts on the Joint Computational Engineering Laboratory (99-D-107) at SNL.	\$ 0	\$ 0	\$ 1,800
TOTAL, Objective 2, Strategy 1, Performance Measure A	\$ 185,360	\$ 194,668	\$ 322,400

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program.

Strategy 1: Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of nuclear testing.

Performance Measure B: Complete the installation of a three trillion operations per second computer system.

The ASCI Platforms Strategy goal is to develop computers capable of 100 Tf peak operations speed by 2004. This performance goal is based on the multi-billion finite element mesh resolution needed for our predictive three-dimensional simulation and modeling codes. These codes are necessary to evaluate complete weapons from the stockpile in a variety of scenarios (reliability, storage, accidents, aging stockpile, etc.) to support annual certification and other requirements. The capability development curve, based on the loss of designers with underground testing experience, is documented in the ASCI Program Plan and far-exceeds historical development patterns. The three weapons laboratories have committed to partnerships under ASCI with different companies of the high-end computer industry to develop computer prototype options on this curve. Capability needed in 1999 requires a computer of over 3 Tf. The ASCI Blue Pacific contract with IBM will provide two major deliverables: a demonstration expected in December 1998 at IBM of the 4096-processor platform operating at system peak of 3.2(+) Tf and sustained performance on a benchmark application of 0.8 Tf; and delivery of the system at LLNL expected in January 1999. Efforts will continue on the development and demonstration of the ASCI Blue Mountain system at LANL.

Objective 2, Strategy 1

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Deliver and install 3.2 Tf Option Blue Pacific system to LLNL	\$ 0	\$ 22,170	\$ 25,100
Option Blue Mountain 3 Tf - LANL	\$ 0	\$ 36,080	\$ 2,800
TOTAL, Objective 2, Strategy 1, Performance Measure B	\$ 0	\$ 58,250	\$ 27,900

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program.

Strategy 1: Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of nuclear testing.

Other Activities supporting the Next Generation of Supercomputing:

A threshold computational capability of at least 100 Tf is required to achieve the level of simulation capability needed for realistic weapon system modeling (including aging) by 2004. The ASCI Program Plan has identified a technical roadmap for achieving the required simulation performance levels. Negotiations for Option White, a 10 Tf platform, are underway. Funding will start in FY 1998 with delivery scheduled in January 2000. The Option White computer will continue to propel the ASCI Program along the planned performance curve to initiate and attain the next generation of super computing. Path Forward activities will address issues related to key integrating and scaling technologies for future systems.

OTHER ACTIVITIES SUPPORTING THE NEXT GENERATION OF SUPERCOMPUTING: (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Continue Path Forward efforts for contract awards to U.S. firms to design/develop the 30 Tf supercomputer Pathforward (Solving industry-wide “show-stoppers”)	\$ 0	\$ 7,750	\$ 11,500
Initiate next generation of supercomputing following the ASCI Program Plan and invest in Option White (10 Tf)	\$ 0	\$ 12,500	\$ 20,000
Continue core computational collaborative efforts with the ASCI program for science-based stockpile stewardship	\$ 20,000	\$ 16,310	\$ 22,900
TOTAL, Objective 2, Strategy 1, Other	\$ 20,000	\$ 36,560	\$ 54,400

Objective 2, Strategy 1

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 2: Develop new nuclear weapons physics experimental test capabilities.

The Comprehensive Test Ban Treaty (CTBT), which was signed by the President in September 1996 and submitted to the Senate on September 23, 1997, prohibits nuclear testing unless the involved State party invokes the "supreme national interest" clause and withdraws from the treaty. The President has expressed his confidence in the ability of the Department's Stockpile Stewardship and Management Program to maintain the U.S. nuclear deterrent without nuclear testing. Two new nonnuclear experimental facilities, the National Ignition Facility (NIF) and the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), are currently under construction. In addition, Defense Programs is also investigating the feasibility of two follow-on facilities, an advanced hydrotest facility and an advanced pulsed power facility, that would improve our understanding of the effects of aging and would expand our current capabilities to verify and validate the improved simulation models.

Substantial advances in experimental capabilities are needed to maintain confidence in the safety and performance of the nuclear stockpile without nuclear testing. Enhanced capabilities will provide the ability to evaluate some safety and performance issues that could have significant stockpile consequences. It is possible that without enhanced capabilities, some nuclear components exhibiting changes in composition or structure might have to be retired because it would not be possible to certify the acceptability of repaired or modified components. Experiments create the reality against which we must benchmark our computer calculations and theoretical advances, all of which lead to improved understanding of weapons science.

Without an underground nuclear test, not all of the physics of a nuclear explosion can be produced simultaneously in a single experiment. Therefore, we will make use of an appropriate suite of complementary experimental capabilities. Several aboveground experimental facilities have been identified that can compensate, at least partially, for the absence of nuclear testing in assessing the performance and safety of nuclear assemblies.

The NIF, an experimental laser-fusion facility at LLNL, will be able to simulate, on a small but diagnosable scale, conditions of pressure, temperature and density close to those that occur during the detonation of a nuclear weapon. NIF will provide a means for experimentally studying primary boosting as well as data for assessing secondary performance and weapons effects and for improving and validating new physics models and codes. Ground was broken for construction of the NIF on May 29, 1997.

The Dual-Axis Radiographic Hydrodynamic Test (DARHT) facility at LANL will be the Nation's most advanced facility for hydrodynamic experiments. DARHT experiments are essential for validating the implosion performance of primaries. Data and information from DARHT and NIF will be integrated with data from experiments in existing facilities and from past experiments and nuclear tests.

Advanced hydrodynamic research is continuing to investigate the feasibility of an Advanced Hydrotest Facility that would provide improved understanding of the effects of aging and weaponization features. Advanced pulsed power research is continuing to determine the feasibility of an

Objective 2, Strategy 2

advanced pulsed power facility to assist in addressing weapons physics issues.

PERFORMANCE MEASURES for Objective 2, Strategy 2 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Meet all cost and schedule goals for construction of the National Ignition Facility in FY 1999 and related technology development.	\$ 227,932	\$ 278,900	\$ 354,600
B. Complete Phase I of the DARHT and complete Title I, Preliminary Design of the remainder of the project. (97-D-102)	\$ 0	\$ 46,300	\$ 36,000
C. Make the decision within the five year period whether to construct an advanced hydrotest facility and/or an advanced pulsed power facility.	\$ 19,300	\$ 44,620	\$ 49,000
Total, Objective 2, Strategy 2	\$ 247,232	\$ 369,820	\$ 439,600

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 2: Develop new nuclear weapons physics experimental test capabilities.

Performance Measure A: Meet all cost and schedule goals for construction of the National Ignition Facility in FY 1999 and related technology development.

The Inertial Confinement Fusion (ICF) program will continue activities associated with the design and construction of the NIF, which will simulate, on a small but diagnosable scale, conditions of pressure, temperature, and density close to those that occur during the detonation of a nuclear weapon. NIF will provide a fuller characterization of the physical phenomena associated with both primary and secondary performance. For the first time, it will be possible in the laboratory to study radiation physics in a regime close to that of secondaries. The NIF will be used to carry out important certification related experiments in the areas of hydrodynamics and mix, radiation flow, and material properties. NIF experiments will also be important for bench marking the advanced codes under development by ASCI, and studying NIF-heated targets will improve the ability to predict the effects of x-radiation on weapon components and weapon systems.

FY 1999 is a significant year for the NIF Project as it is the year in which installation of special equipment and the target chamber will begin within the Laser and Target Area Building. The Optics Assembly Building will also be completed during FY 1999 and will be made ready for full operation in FY 2000. The objective during FY 1999 and FY 2000 is to achieve the established schedule within cost (as defined in the project's baseline) so that

Objective 2, Strategy 2

startup activities can begin in FY 2001 and operation of the first laser beam bundle may begin in FY 2002. A number of FY 1997 and FY 1998 activities are critical to achieving FY 1999 goals, including the majority of Title II design and the initiation of construction. In addition, there are several critical ICF program activities supporting the NIF project that are scheduled during FY 1997 and FY 1998, including the majority of the NIF laser and optics technology development activities, start of pilot production for NIF optics, and the transition/ramp-up to NIF operations.

NIF is funded as a line item construction project within the Stockpile Stewardship program. Funding below includes the line item construction funding, other project costs of the project, and ICF program funding for related technology development.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Support engineering design activities and complete Title II detailed design in FY 1999 (<i>NIF line item 96-D-111</i>).	\$ 69,538	\$ 37,567	\$ 20,894
Continue conventional facilities construction (<i>NIF line item 96-D-111</i>).	\$37,216	\$87,891	\$33,512
Continue special equipment procurement/installation (<i>NIF line item 96-D-111</i>).	\$12,397	\$58,025	\$218,000
Support integration activities including construction related assurances and project management (<i>NIF line item 96-D-111</i>).	\$12,749	\$14,317	\$11,794
Continue activation/startup planning, assurances and integration activities and complete facilitization of optics vendors in FY 1999 (<i>NIF Other Project Costs</i>).	\$59,200	\$ 31,300	\$6,800
Start optics pilot production (<i>ICF program</i>).	\$ 0	\$11,500	\$23,800
Complete majority of laser and optics technology development (<i>ICF program</i>).	\$36,832	\$32,100	\$11,800
Transition to NIF operations (<i>ICF program</i>).	\$ 0	\$6,200	\$28,000
Total, Objective 2, Strategy 2, Performance Measure A	\$227,932	\$278,900	\$354,600

Objective 2, Strategy 2

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 2: Develop new nuclear weapons physics experimental test capabilities.

Performance Measure B: Complete Phase 1 of the Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT) and complete Title I , Preliminary Design of the remainder of the project.

DARHT, which is now under construction at LANL, will be one of the principal tools for evaluating and ensuring the safety and reliability of the enduring nuclear stockpile, specifically providing an experimental capability to validate the implosion performance of nuclear weapons primaries. DARHT will diagnose full-size hydrodynamic tests of nonnuclear mockups of nuclear weapon primaries. Moreover, DARHT experiments will investigate shock physics, high-velocity impacts, material science, high-explosive science, and industrial applications.

This project, funded within the Stockpile Stewardship program, has three phases:

Phase 1 provides for the construction of the Radiographic Support Laboratory (completed in November 1990); development, procurement, and installation of the first of two flash x-ray machines (for dual-axis radiography) at the Hydrotest Firing Site; procurement and installation of state-of-the-art hydrodiagnostic instrumentation at the firing site; construction of a blastproof building to house the dual-axis radiographic systems and supporting calibration activities; and the first containment vessel. Phase 1 will be completed in FY 1998 and the first axis will be operational by June 1999.

Phase 2 includes a second electron beam accelerator that will be installed in the second accelerator hall (already provided by Phase 1) and a second stage of increased containment of testing emissions. In late September 1997, the long pulse Linear Induction Accelerator generating four high-quality radiographic pulses over two microseconds was selected as the technology for the second axis. This represents a major and, in the absence of underground testing, necessary increase in technical capability over the first axis machine. This budget reflects an increase of \$73,000,000 in the total estimated cost (TEC) of DARHT required for the four-pulse x-ray machine; a more extensive discussion of the TEC increase can be found in the construction project datasheet.

Phase 3 will implement the final containment techniques, based on experience gained during Phases 1 and 2, that will result in at least a 75 percent reduction in testing emissions when compared to the DARHT Baseline Alternative analyzed in the EIS for the remaining years of facility operation. The decision to possibly further reduce emissions by developing a vessel system capable of containing a 440-lb (200-kg) charge will be made during this phase. No additional funding will be required for Phase 3 unless a decision is made to develop the 440-lb (200-kg) vessel.

Preliminary design for the Linear Induction Accelerator will be completed in FY 1998; preliminary design for the containment/confinement system will be completed in FY 1999; and, preliminary design for the injector will be completed in FY 2000. During FY 1999, long-lead procurements will begin for the accelerator, injector, and containment/confinement system, and fabrication and construction activities will be initiated.

Objective 2, Strategy 2

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Complete construction of Phase 1	\$ 0*	\$24,300	\$ 0
Preliminary Design for Phase 2 and Phase 3	\$ 0	\$22,000	\$36,000
Total, Objective 2, Strategy 2, Performance Measure B	\$ 0	\$46,300	\$36,000

* There was a 15-month construction delay from January 26, 1995, to April 16, 1996, due to a Federal Court injunction. Construction activities resumed in May 1996 and continued throughout FY 1997 using previously appropriated funds.

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 2: Develop new nuclear weapons physics experimental test capabilities.

Performance Measure C: Make the decision within the five year period whether to construct an advanced hydrotest facility and/or an advanced pulsed power facility.

Although DARHT will provide the needed hydrodynamic data about weapons systems that meet intermediate term needs, an advanced hydrodynamic radiography and hydrotesting capability will be needed in the longer term to provide more comprehensive information about weapons implosions. An advanced radiography capability would expand the multipulse, multiaxis radiographic capabilities planned for the DARHT and must provide high resolution reconstruction of three-dimensional objects over a sequence in time.

Advanced radiography research and technology development at the three weapons laboratories will provide the technical information necessary to support a decision by FY 2001 as to which of three competing advanced hydrodynamic radiography technologies will be chosen for further development. Several candidate technologies are being explored through research and technology development efforts to understand the radiographic requirements and technology options for a next generation Advanced Hydrotest Facility. The technologies being developed include, but are not limited to: x-ray radiography using either an advanced linear induction accelerator approach or an inductive voltage adder approach, and proton radiography.

Pulsed power technology research continues on the Z facility (the renamed ICF facility, PBFA-II) at the Sandia National Laboratories. These activities will lead to a determination regarding the merits of a follow-on pulsed power facility to extend the range of capabilities to address weapons physics issues.

Objective 2, Strategy 2

These activities are funded within Stockpile Stewardship Performance Assessment Science & Technology.

SUPPORTING ACTIVITIES for Performance Measure C (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Conduct linear induction accelerator design technology study.	\$ 2,500	\$ 11,000	\$ 12,000
Demonstrate the utility of inductive voltage adder technology.	\$ 0	\$ 2,990	\$ 12,000
Develop proton radiography as a technology option for a future Advanced Hydrotest Facility.	\$ 2,500	\$ 6,484	\$ 12,000
Conduct pulsed power research for potential advanced pulsed power facility.	\$ 14,300	\$ 24,146	\$ 13,000
Total, Objective 2, Strategy 2, Performance Measure C	\$ 19,300	\$44,620	\$ 49,000

Objective 2, Strategy 2

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 3: Advance our understanding of the fundamental characteristics of weapons behavior through weapon systems engineering and advanced experiments to support future assessments of weapons safety, reliability, and performance.

The science and engineering of nuclear weapons are extremely complex. There are many parameters and unknowns that may greatly affect the performance of a nuclear warhead. Without nuclear testing as the final "arbiter," some areas of nuclear weapon science are incomplete. In particular, we need to understand the underlying physics phenomena and develop experimental data to improve computer modeling and simulation capabilities and model-based assessment of weapons safety and reliability. An integrated experimental and theoretical research program, conducted by highly skilled scientists and engineers in the Core Stockpile Stewardship and Inertial Confinement Fusion programs, meets these essential needs and furthers our knowledge and understanding of the fundamental science of the nuclear weapons systems and subsystems.

In the future, weapon assessment will rely on a high quality design evaluation and validation program using the most accurate, detailed modeling and information available. This, in turn, depends on an understanding of the complex underlying engineering and physical phenomena, necessary for weapon performance based on a high integrity data base. Models must be validated by experiments that simulate physical phenomena and engineering designs as close to actual weapons conditions as possible. Future assessments of safety, reliability and performance of the stockpile will depend on the integration of the experimental results and computer modeling and simulation.

Subcritical experiments, an essential component of the Stockpile Stewardship program, are providing valuable scientific information about the behavior of nuclear materials during the implosion phase of warhead operation. This information is needed to accurately predict the performance of stockpile warheads as they age. The first and second subcritical experiments, "Rebound" and "Holog," were successfully completed at the Nevada Test Site on July 2, and September 18, 1997. In FY 1998 and FY 1999, three to four subcritical experiments sponsored by the nuclear weapons design laboratories (LANL and LLNL) are planned each year at the Nevada Test Site.

In the Inertial Confinement Fusion program, the near-term objective is to demonstrate the feasibility of burning small amounts of thermonuclear fuel in the laboratory. The research and experiments conducted by the ICF program will contribute to an increased understanding of the physics of marginal thermonuclear fuel burn, which is vital to the weapons stockpile stewardship mission.

These activities take place mainly at the three weapons laboratories and the Nevada Test Site and are funded in the Stockpile Stewardship program.

PERFORMANCE MEASURE for Objective 2, Strategy 3 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. In FY 1999, Conduct three to four subcritical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapon.	\$40,117	\$82,446	\$82,065
OTHER EXPERIMENTAL AND THEORETICAL RESEARCH.	\$ 382,789	\$ 354,209	\$ 356,357
OTHER HIGH ENERGY DENSITY RESEARCH.	\$ 137,375	\$ 132,554	\$ 140,400
Total, Objective 2, Strategy 3	\$560,281	\$ 569,209	\$ 578,822

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 3: Advance our understanding of the fundamental characteristics of weapons behavior through weapon systems engineering and advanced experiments to support future assessments of weapons safety, reliability, and performance.

Performance Measure A: In FY 1999, conduct three to four subcritical experiments at the Nevada Test Site (NTS) to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapon.

To maintain the nuclear weapon stockpile, it is necessary for the designers and scientists at the nuclear weapons laboratories to understand the dynamic material properties of plutonium through subcritical experiments. Experiments will be required to assess plutonium behavior due to: (1) changes in weapon performance due to aging of the weapon or components and (2) alternative remanufacturing techniques using different processing methods when the old production method is no longer available.

Subcritical experiments are scientific experiments using chemical high explosives to generate high pressures which are applied to nuclear materials. High speed measurement instruments are used to obtain valuable scientific data on the behavior of those nuclear materials under conditions similar to those during the implosion phase of a nuclear weapon. The configuration and quantities of explosives and nuclear materials are designed so that no nuclear explosion will take place. The data obtained from subcritical experiments will help benchmark complex computer simulations of nuclear weapons performance that will be used to certify the safety and reliability of the Nation's nuclear weapons stockpile, without nuclear testing.

Two subcritical experiments were conducted at the NTS in FY 1997. Funding for these experiments is provided mainly by Testing Capabilities and Readiness at the Nevada Test Site, but also by Performance Assessment Science and Technology at Los Alamos and Lawrence Livermore National

Objective 2, Strategy 3

Laboratories, as well as funding by Testing Capabilities and Readiness at the Sandia National Laboratories.

In FY 1998 and FY 1999, three to four subcritical experiments are planned at the Nevada Test Site each year. These experiments are sponsored by the nuclear weapons design laboratories (LANL and LLNL) and will be devoted to both improving our basic understanding of nuclear materials properties and certifying the safety and reliability of the enduring nuclear weapons stockpile. Continued annual certification of the U.S. nuclear weapons stockpile, without nuclear testing, will be another important indication of success for this area of performance.

The NTS provides the technical, engineering, scientific and construction expertise necessary in fielding and conducting subcritical experiments. The confidence in the nuclear stockpile requires in-depth knowledge of the science and engineering of nuclear weapons and materials. Of particular interest is data on the high-pressure behavior of plutonium and surface phenomenology that can be used in calculations and modeling to better understand and assure weapon performance, reliability, and safety. These experiments will generate fundamental data about shocked plutonium and configuration data, confirming implosion calculations.

The NTS is the sole location for the proposed experiments and is supported by an approved Environmental Impact Statement, and supporting Record of Decision, covering the release of Special Nuclear Material (SNM) into underground soils media. The subcritical experiments are carried out in the U1a complex which includes surface structures such as hoisting, ventilation, and other equipment required to support the underground complex located 962 feet below the surface. The U1a complex was originally designed to support low yield underground nuclear tests. There is concern related to the ability to mine while at the same time preparing for an experiment. To insure the success of these experiments, a plan to upgrade the U1a complex to provide additional access and scientific diagnostic cabling, as well as areas to assemble and stage diagnostic equipment, is being developed. This plan should be completed in FY 1998 and will provide the framework to systematically develop the complex to support future experiments.

Performance in this area will be measured by completion of the planned experiments and realization of high quality data from those experiments which allow the designers and scientists at the nuclear weapons laboratories to understand the dynamic material properties of plutonium. Obtaining the data required to validate the computer codes needed to simulate nuclear weapons performance to assist in the certification of the safety and reliability of the Nation's nuclear weapons stockpile, without nuclear testing, is another important indication of success for this area of performance.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
NTS will provide support to the nuclear weapons laboratories in the areas of technical, engineering, scientific, and construction expertise necessary to field and conduct three to four subcritical experiments in FY 1999.	\$28,882	\$50,246	\$59,965

Objective 2, Strategy 3

Los Alamos National Laboratory is responsible for one to two subcritical experiments in FY 1999.	\$5,735	\$21,000	\$12,000
Lawrence Livermore National Laboratory is responsible for one to two subcritical experiments in FY 1999.	\$4,000	\$9,200	\$8,100
Sandia National Laboratories will provide support to the Nuclear Weapons Design Laboratories and NTS personnel in the arming and firing of subcritical experiments.	\$1,500	\$2,000	\$2,000
Total, Objective 2, Strategy 3, Performance Measure A	\$ 40,117	\$82,446	\$82,065

Number of Subcritical Experiments per year	FY 1997	FY 1998	FY 1999
(Actual for FY 1997, Planned for FY 1998 and FY 1999)	2	3-4	3-4

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 3: Advance our understanding of the fundamental characteristics of weapons behavior through weapon systems engineering and advanced experiments to support future assessments of weapons safety, reliability, and performance.

Other Experimental and Theoretical Research.

An integrated experimental and theoretical research program, conducted by highly skilled scientists and engineers is essential to further our knowledge and understanding of the fundamental science of the nuclear weapons systems and subsystems. Integrated experiments, which include as many features common to a weapon as possible or practical, improve our understanding of underlying physics phenomena and provide a means for improving computer modeling and simulation capabilities. Experiments that isolate single features relevant to weapon performance are critical for database improvement and for testing physical models embedded in large simulation codes. These activities are also a key ingredient for maintaining the competence of designers and technical experts and for training new personnel.

The Department already has an extensive array of aboveground experimental facilities for conducting relevant experiments. These facilities are located at the weapons laboratories, the Nevada Test Site, universities, and other locations. This array of facilities will be operated to conduct experiments that increase expert understanding, obtain a more complete data base, and generally improve the predictive capabilities for verifying and validating the U.S. nuclear weapon stockpile. They provide a capability to research both primary and secondary conditions of nuclear weapon operation.

Technical issues of particular concern regarding the primary state of a nuclear weapon include nuclear criticality of the assembly, ignition of the

Objective 2, Strategy 3

deuterium-tritium boost gas, the three-dimensional shape of the late-time boost-gas cavity, and the effect of the mix of materials into the boost gas on burn and ignition. High-resolution, multiple-time, multiple-view hydrodynamic experiments using simulant materials will be used to define the implosion characteristics and assess primary safety, reliability, and performance. Well-diagnosed pulsed-power and laser-based experiments will also be used to gain an improved understanding of implosion and ignition physics. Pulsed-power and laser facilities will also be used for studies of the effects of material behavior, including age-related material changes, on primary performance. The data gathered in such experiments is essential for evaluating new and evolving computational models of primary-stage behavior. LANSCE, Atlas, and DARHT at LANL; Nova, NIF, and FXR at LLNL; and a future advanced hydrodynamic facility are, or will be, particularly relevant to assessing primary conditions.

Critical issues for a weapon secondary relate to the effects on system performance of manufacturing imperfections and age-related changes in materials characteristics. In order to assess the effects of these manufacturing and materials features, improved predictive capabilities are required for radiation transport, secondary hydrodynamics, and fusion burn. More extensive and accurate experimental data are also needed to improve predictive capability. However, the conditions relevant to secondary performance are extremely difficult to create in the laboratory setting, and most data must be extrapolated to the weapons condition, requiring expert judgment and advanced simulation codes. NIF, Saturn and Z at SNL, and potentially, an advanced pulsed power source will be particularly relevant to assessing secondary conditions.

These activities are funded in the **Accelerated Strategic Computing Initiative, Special Projects, Performance Assessment Science & Technology, Systems Components Science and Technology, Chemistry and Materials Science and Technology, and Stockpile Computing** elements of the Stockpile Stewardship program.

SUPPORTING ACTIVITIES (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Conduct radiation flow, hydrodynamic, and equations of state experiments.	\$ 88,127	\$ 75,810	\$ 99,637
Conduct research on LANSCE and complete funding for LANSCE Short-Pulse Spallation Source Accelerator Enhancement Project.	\$ 37,160	\$ 41,300	\$ 46,300
Conduct chemistry and materials research, including high explosives and special nuclear materials experiments.	\$ 43,199	\$ 40,223	\$ 40,078
Conduct tritium studies.	\$ 6,347	\$ 3,977	\$ 3,586
Maintain modeling and simulation efforts and embark on the Numeric Environment for Weapon Simulation initiative.	\$ 57,866	\$40,539	\$ 44,800

Objective 2, Strategy 3

Establish basis for model validation and system certification.	\$ 14,560	\$ 7,000	\$ 13,100
Systems engineering and component research, including radiation-hardened microelectronic systems.	\$ 49,688	\$ 61,583	\$ 42,217
Conduct nonnuclear component research in all normal and abnormal environments.	\$ 64,000	\$ 62,006	\$ 52,093
DoD/DOE Munitions Technology Development MOU.	\$ 6,742	\$ 8,371	\$ 8,146
Complete funding of Atlas (96-D-103).	\$ 15,100	\$13,400	\$ 6,400
Total, Objective 2, Strategy 3, Other experimental and theoretical research	\$ 382,789	\$ 354,209	\$ 356,357

OBJECTIVE 2: Replace nuclear testing with a science-based Stockpile Stewardship and Management Program

Strategy 3: Advance our understanding of the fundamental characteristics of weapons behavior through weapon systems engineering and advanced experiments to support future assessments of weapons safety, reliability, and performance.

Other High Energy Density Research.

Utilizing the unique capabilities of the Nova, Trident, Z, Omega, and Nike facilities, for conducting high energy density experiments essential to a fuller understanding of the physical phenomena of nuclear weapons, the Inertial Confinement Fusion (ICF) program will conduct a broad research program. Using both laser and pulsed power facilities, the ICF facilities will be operated to conduct a variety of experiments related to both primary and secondary performance. Studies of instability growth in materials and opacity measurements at higher temperatures and densities will concentrate on obtaining data at temperatures greater than 150 eV and densities greater than 0.1 g/cc. Experiments that are relevant to secondary performance by probing radiation flow in constrained geometries and in materials with impurities will be conducted. In addition, the database on equation of state, material properties, and other fundamental data vital for modeling the aging stockpile will be enhanced.

The ICF strategy includes critical theory, computation, and modeling R&D in support of available simulation codes as well as for bench marking advanced computer codes under development by ASCI. The activities include maintenance and improvements of current weapon simulation codes, material databases and models. High fidelity simulation codes are essential to address stockpile issues for stockpile validation and verification, to support verification and validation of NIF ignition target designs, to provide a computational test base for physics issues, and to provide a stronger connection between archived test data and existing design processes. Experiments using indirect drive, direct drive and pulsed power accelerators address a variety of target physics, design and code development issues. In addition, related target fabrication, including both cryogenic and

Objective 2, Strategy 3

non-cryogenic target research, development and production is supported.

SUPPORTING ACTIVITIES (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Conduct indirect drive ignition preparation and other related stewardship experiments on ICF laser facilities.	\$ 63,598	\$ 56,346	\$ 57,457
Determine feasibility of NIF direct drive ignition and develop direct drive for use in stewardship.	\$ 31,084	\$ 34,913	\$ 35,500
Conduct pulsed power experiments and technology development.	\$ 26,312	\$ 24,500	\$ 31,700
Deliver required targets to ICF facilities and continue diagnostic and target fabrication development for NIF.	\$ 15,721	\$ 16,341	\$ 15,043
Provide for independent review and technical support for ICF program.	\$ 660	\$ 454	\$ 700
Total, Objective 2, Strategy 3, Other high energy density research.	\$ 137,375	\$ 132,554	\$ 140,400

Objective 2, Strategy 3

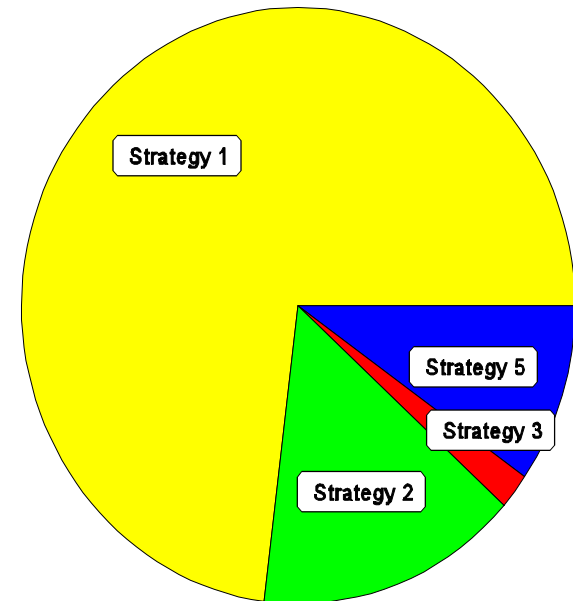
OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise. {2,222M}

The successful execution of the Stockpile Stewardship and Management Program assumes that the physical plant and personnel to carry out that program are available and ready to carry out the programmatic requirements of the program. The activities performed under this objective ensure that assumption is realized in an efficient and effective manner to support ongoing missions. A detailed listing of sites where Defense Programs supports the plant and personnel is provided in the Funding By Site table included in the executive summary. These activities are coordinated in support of four of the following five strategies:

1. Provide an appropriately-sized, cost-effective, safe, secure, and environmentally sound national security enterprise. SSMP primarily uses the plant and personnel at the Lawrence Livermore National Laboratory, California; the Nevada Test Site, Nevada; the Los Alamos and Sandia National Laboratories, New Mexico; the Pantex Plant, Texas; the Kansas City Plant, Missouri; the Y-12 Plant, Tennessee; and the Savannah River Site, South Carolina. Starting in FY 1999, these infrastructure requirements will also include the management of newly generated waste at the Los Alamos and Sandia National Laboratories and the Pantex Plant. In addition to maintaining the programmatic and site infrastructure at these locations, Defense Programs is also proceeding with a major initiative to downsize the production plants, consistent with the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, that will allow the plants to maintain efficient operations despite significantly reduced workloads. To ensure the ongoing effectiveness of the technologies in the production plants, Defense Programs is proceeding with the Advanced Manufacturing Design and Production Technologies Program (ADaPT) that will move new production technologies from the laboratories to the production floors. The major infrastructure enhancement program to provide a war reserve pit production capability at Los Alamos National Laboratory continues in FY 1999 with maintenance upgrades necessary to support the W88 pit rebuild program.

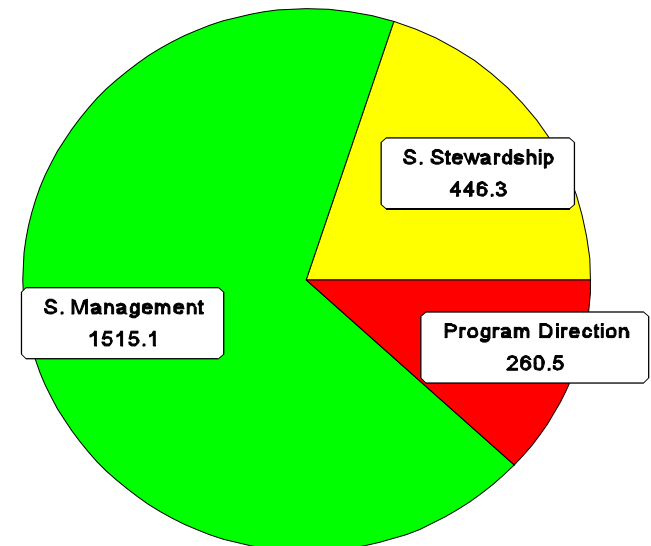
Objective 3: Ensure the vitality of DOE's national security enterprise.

Vitality of DOE National Security Enterprise, By Strategy



FY 1999 \$ 2,222 Million

Vitality of DOE National Security Enterprise, By Decision Unit



2. Ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements.

Defense Programs continues to manage its site contractor workforce to allow for continued downsizing while supporting new programmatic missions such as the ADaPT program, the Accelerated Strategic Computing Initiative, the Stockpile Life Extension Program, and the Tritium Supply Program.

The program is also working to effectively utilize partnerships and alliances with universities and private industry to enhance mission accomplishments. And, Defense Programs continues to reengineer its federal workforce to allow it to continue to meet its planning and oversight responsibility while at the same time meeting the Department's Strategic Alignment Initiative staffing reduction targets.

3. Ensure and enhance protection of nuclear materials, sensitive information, and facilities. Defense Programs continues to meet its safeguards and security requirements, particularly the surveillance of materials excess to Defense Programs requirements that are currently stored at the Hanford Reservation, the Idaho National Environmental Engineering Laboratory, the Oak Ridge National Laboratory and the Savannah River Site. This budget reflects transfer of responsibility for much of this material to the Office of Environmental Restoration and Waste Management. Ongoing enhancements to the Defense Programs' security posture include upgrades to security personnel at the Lawrence Livermore National Laboratory Superblock Facility, and construction at Los Alamos National Laboratory.

4. Provide DOE-related intelligence and threat assessment support to members of the national security community. Defense Programs does not provide direct programmatic support to this DOE National

Security strategy.

5. Maintain nuclear test readiness and enhance emergency management capabilities to address any nuclear weapons, radiological, or other emergency in the United States or abroad.

Defense Programs maintains a number of contingency assets that can be called upon in times of national emergency. The Nevada Test Site (NTS) is maintained in a state of readiness that would allow the Department to support a Presidential decision to conduct one or a series of underground nuclear tests (i.e., Comprehensive Test Ban Treaty non-compliant experiments). In the mean time, the unique experimental capabilities of the NTS continue to be used by the Stockpile Stewardship and Management Program and other defense and civilian users. Defense Programs also continues to maintain a series of nuclear emergency response assets available to respond to radiological threats, either in the United States or abroad.

A summary matrix of funding by strategy follows; a detailed matrix of funding by Strategy and Budget Structure is provided on the following page.

(Budget Authority Dollars in Millions)

Objective 3	FY 1997	FY 1998	FY 1999
Strategy 1	1,395.3	1,460.4	1,627.8
Strategy 2	417.0	318.5	336.6
Strategy 3	120.3	78.3	46.8
Strategy 5	224.0	222.9	210.8
Total, Objective 3	2,156.6	2,080.1	2,222.0

Objective 3: Ensure the vitality of DOE's national security enterprise.

DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
OBJECTIVE 3: Ensure the Vitality of DOE's National Security Enterprise
(Dollars in Thousands)

STRATEGY:	FY 1997					FY 1998					FY 1999				
	1	2	3	5	Total	1	2	3	5	Total	1	2	3	5	Total
STOCKPILE STEWARDSHIP															
Core Stockpile Stewardship															
Direct Stockpile Activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Experimental Activities	0	0	0	7,770	7,770	0	0	0	8,293	8,293	0	0	0	6,585	6,585
Accelerated Strategic Computing Initiative	0	6,500	0	0	6,500	0	15,500	0	0	15,500	0	13,500	0	0	13,500
Special Projects	633	0	1,254	0	1,887	662	0	0	0	662	67,122	0	0	0	67,122
Performance Assessment Science & Tech'y	10,091	0	0	0	10,091	10,362	1,000	0	0	11,362	13,070	1,500	0	0	14,570
Systems Components Science & Tech'y	20,129	0	0	0	20,129	12,626	0	0	0	12,626	16,162	0	0	0	16,162
Chemistry and Materials Science & Tech'y	11,167	0	7,200	0	18,367	11,845	0	7,700	0	19,545	10,930	0	6,073	0	17,003
Stockpile Computing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Testing Capabilities & Readiness	0	0	0	135,638	135,638	0	0	0	128,182	128,182	0	0	0	121,935	121,935
Laboratory Capital Equipment & General Plant	37,814	0	0	0	37,814	46,812	0	0	5,000	51,812	46,148	0	0	0	46,148
Construction	75,637	0	0	1,000	76,637	36,443	0	0	2,667	39,110	66,676	0	0	4,667	71,343
Subtotal, Core Stockpile Stewardship	155,471	6,500	8,454	144,408	314,833	118,750	16,500	7,700	144,142	287,092	220,108	15,000	6,073	133,187	374,368
Inertial Confinement Fusion															
Operations & Maintenance	0	1,153	0	0	1,153	0	2,000	0	0	2,000	0	3,000	0	0	3,000
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Inertial Confinement Fusion	0	1,153	0	0	1,153	0	2,000	0	0	2,000	0	3,000	0	0	3,000
Technology Partnerships	4,188	55,212	0	0	59,400	4,000	51,901	0	0	55,901	0	60,000	0	0	60,000
Education	0	10,000	0	0	10,000	0	8,944	0	0	8,944	0	9,000	0	0	9,000
Subtotal, STOCKPILE STEWARDSHIP	159,659	72,865	8,454	144,408	385,386	122,750	79,345	7,700	144,142	353,937	220,108	87,000	6,073	133,187	446,368
STOCKPILE MANAGEMENT															
Core Stockpile Management															
Weapons Program	21,801	0	0	0	21,801	18,043	0	0	0	18,043	16,067	0	0	0	16,067
Materials Recycle and Recovery	27,195	0	0	0	27,195	41,107	0	0	0	41,107	47,597	0	0	0	47,597
Production Support	248,905	0	0	0	248,905	245,592	0	0	0	245,592	260,739	0	0	0	260,739
Transportation Safeguards	66,400	0	0	0	66,400	69,000	0	0	0	69,000	70,000	0	0	0	70,000
Reconfiguration/Downsizing/Pit Production	30,000	0	0	0	30,000	62,240	0	0	0	62,240	97,463	0	0	0	97,463
Infrastructure Programs	631,551	34,469	0	0	666,020	706,457	0	0	0	706,457	686,117	0	0	0	686,117
Plant Capital Equipment & General Plant	49,722	0	0	0	49,722	36,875	0	0	0	36,875	70,964	0	0	0	70,964
Construction	86,581	0	4,000	0	90,581	74,170	0	9,200	0	83,370	85,258	0	18,864	0	104,122
Subtotal, Core Management	1,162,155	34,469	4,000	0	1,200,624	1,253,484	0	9,200	0	1,262,684	1,334,205	0	18,864	0	1,353,069
Enhanced Surveillance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adv Manu, Design & Production Technology	57,588	0	0	0	57,588	73,272	0	0	0	73,272	62,600	0	0	0	62,600
Radiological/Nuclear Accident Response															
Operations & Maintenance	0	0	0	75,800	75,800	0	0	0	78,808	78,808	0	0	0	77,600	77,600
Construction	0	0	0	3,825	3,825	0	0	0	0	0	0	0	0	0	0
Subtotal, Rad/NUC	0	0	0	79,625	79,625	0	0	0	78,808	78,808	0	0	0	77,600	77,600
Tritium Source															
Operations & Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Tritium Source	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials	0	0	107,820	0	107,820	0	0	61,417	0	61,417	0	0	21,911	0	21,911
Subtotal, STOCKPILE MANAGEMENT	1,219,743	34,469	111,820	79,625	1,445,657	1,326,756	0	70,617	78,808	1,476,181	1,396,805	0	40,775	77,600	1,515,180
WEAPONS PROGRAM DIRECTION	15,921	309,679	0	0	325,600	10,868	239,132	0	0	250,000	10,900	249,600	0	0	260,500
TOTAL, DEFENSE PROGRAMS	1,395,323	417,013	120,274	224,033	2,156,643	1,460,374	318,477	78,317	222,950	2,080,118	1,627,813	336,600	46,848	210,787	2,222,048

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 1: Provide an appropriately sized, cost-effective, safe, secure, and environmentally sound national security enterprise.

The Stockpile Stewardship and Management complex, as a physical entity, primarily exists at 9 sites: the Lawrence Livermore National Laboratory in California, Los Alamos National Laboratory in New Mexico, Sandia National Laboratories in New Mexico and California, the Nevada Test Site in Nevada, the Pantex Plant in Texas, the Kansas City Plant in Missouri, the Y-12 Plant in Tennessee, and the Savannah River Site in South Carolina. In addition to maintaining the sites to support the Stockpile Stewardship and Management missions, Defense Programs also has responsibility for supporting the total site infrastructure at all of these sites, except for the Savannah River Site where the Office of Environmental Management provides this service.

In FY 1998, Defense Programs participated in a pilot project to transfer from the Office of Environmental Management responsibility for and funding for the management of newly generated waste back to the generator. Based on this pilot, in FY 1999, the responsibility for newly generated waste and certain previously generated waste will be transferred to DP for the Los Alamos and Sandia National Laboratories (New Mexico) and the Pantex Plant. Sites participating in the original pilot, Savannah River Site (tritium facilities only) and Kansas City Plant, will also transfer permanently to Defense Programs.

Another change to Defense Program's infrastructure requirements will result from DP obtaining responsibility for the funding of security investigations for its M&O contractors in the field. In FY 1999, the Department will divide responsibility for obtaining and maintaining security clearances. The Office of Security Affairs, which has been responsible for funding all Federal and contractor employee clearances, will pay only for clearances of Federal employees, both at headquarters and the field as well as contractors at headquarters. Program organizations will be responsible for contractor clearances in the field, using program funds. This change in policy will enable program managers to make the decisions as to how many and what level clearances are necessary for effective program execution. Defense Programs is estimating on a preliminary basis that about \$13 million will be required in FY 1999 to accommodate this requirement for M&O contractors in the field supporting the Defense Programs mission.

Defense Programs has a major ongoing effort to downsize the four traditional production plants. The Stockpile Management Restructuring Initiative (SMRI) supports the implementation decisions related to production facility downsizing or relocation of missions resulting from the Stockpile Stewardship and Management Programmatic (SSMP) Environmental Impact Statement (PEIS) and the Tritium Supply and Recycling PEIS. The Record of Decision for restructuring the production complex was announced on December 19, 1996. It involves the downsizing in place of weapons assembly/disassembly and high explosives at the Pantex Plant (PXP), nonnuclear component fabrication at the Kansas City Plant (KCP), weapons secondary and case fabrication at the Y-12 Plant, and consolidation of existing tritium operations at the Savannah River Site (SRS). In FY 1999, engineering design activities will continue at SRS and the Y-12 Plant, and begin at the KC and PX Plants.

While downsizing the plants to allow them to operate more efficiently, Defense Programs continues to develop new technologies that will allow the plants to continue to operate effectively. The Advanced Manufacturing, Design and Production Technologies Program (ADaPT) and other advanced manufacturing programs will reengineer the weapons complex product realization capabilities and support the Stockpile Life Extension Program by developing, validating, and implementing advanced tools, manufacturing processes, and practices needed to design, develop, and fabricate nuclear weapons systems and components of improved quality at reduced cost. The application of advanced manufacturing technologies will radically change the way the DOE designs, builds, and test systems and components by infusing new product and process technology and adopting modern business and engineering practices. ADaPT and supporting advanced manufacturing programs are the Defense Programs' vehicle for improving product realization within a downsized enterprise. ADaPT cuts across all levels of product development from the manufacture of materials to the integration of thousands of parts into a weapon.

At the Los Alamos National Laboratory, Defense Programs is re-instituting the war reserve pit production capability that has not existed since production activities ceased at the Rocky Flats Plant. The Pit Production Program consists of several parts: 1) a project to initially assure the capability to build war reserve pits has been captured; 2) a development and manufacturing period focused on meeting near term stockpile support requirements; 3) an emplacement of a set manufacturing capacity for long term support of the stockpile; and 4) the development of a contingency plan to allow the Department to move to higher rates of manufacturing should unforeseen requirements come about in the future.

The transportation program includes activities associated with providing safe and secure movement of nuclear weapons, strategic quantities of special nuclear material, nuclear components, selected non-nuclear weapons components, and limited-life components to and from military locations and between nuclear weapon complex facilities within the continental United States.

PERFORMANCE MEASURES for Objective 3, Strategy 1 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. All facilities required for successful achievement of the Stockpile Stewardship and Management Plan are operational.	\$ 1,228,017	\$ 1,224,743	\$ 1,316,913
B. The Stockpile Management Restructuring Initiative is on schedule to downsize and modernize production capabilities.	\$ 0	\$ 32,270	\$ 79,436
C. Adhere to schedules set forth in the Advanced Design and Production Technology Plan.	\$ 79,105	\$ 89,898	\$ 78,762
D. Meet schedules to rebuild, qualify and certify Trident II pits by FY 2001 and develop intermediate pit production capability of 20 pits per year at the Los Alamos National Laboratory by 2007.	\$ 0	\$ 26,420	\$ 66,635

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Other transportation and logistics capabilities.	\$ 88,201	\$ 87,043	\$ 86,067
Total, Objective 3, Strategy 1	\$ 1,395,323	\$ 1,460,374	\$ 1,627,813

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 1: Provide an appropriately sized-, cost-effective, safe, secure, and environmentally sound national security enterprise.

Performance Measure A: All facilities required for successful achievement of the Stockpile Stewardship and Management Plan are operational.

A sound national security enterprise requires capital investment in facilities to ensure the availability of the physical infrastructure at the three national laboratories, the Nevada Test Site, and the four traditional production plants necessary to support ongoing Defense Programs missions. Defense Programs provides total site infrastructure requirements (e.g., utilities such as power supply systems, and space for non-programmatic organizations such as the site environmental compliance organizations). These activities are of a routine, ongoing nature.

In FY 1998, Defense Programs participated in a pilot project to transfer from the Office of Environmental Management responsibility for and funding for the management of newly generated waste back to the generator. This pilot involved the Kansas City Plant and the Savannah River Site tritium facilities. Based on this pilot, in FY 1999, the responsibility for newly generated waste and certain previously generated waste will be transferred to DP for the Los Alamos and Sandia National Laboratories and the Pantex Plant. DP will also retain responsibility for newly generated waste at Kansas City and Savannah River tritium facilities.

Another change to Defense Programs' infrastructure requirements will result from DP obtaining responsibility for the funding of security investigations for its M&O contractors in the field. In FY 1999, the Department will divide responsibility for obtaining and maintaining security clearances. The Office of Security Affairs, which has been responsible for funding all Federal and contractor employee clearances, will pay only for clearances of Federal employees, both at headquarters and the field as well as contractors at headquarters. Defense Programs will now be responsible for clearances of contractors in the field who directly support the DP mission, using program funds. This change in policy will enable program managers to make the decisions as to how many and what level clearances are necessary for effective program execution. Defense Programs is estimating on a preliminary basis that about \$13 million in FY 1999 will be required to accommodate this requirement for M&O contractors in the field supporting the Defense Programs mission.

Discussed below are the non-routine infrastructure activities going on at each site in FY 1999, particularly construction line items. Additional detail on the construction projects can be found in the construction project data sheets. The Stockpile Management Restructuring Initiative construction projects at the Kansas City, Pantex and Y-12 Plants and at the Savannah River Site are discussed in detail under performance measure C. Also

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included elsewhere are LANL nuclear materials projects (performance measure D and performance measure A of Objective 3, Strategy 3); major laboratory programmatic projects (Objective 2, Strategy 2); and projects required to support START I/ Rapid Reactivation (Objective 1, Strategy 1).

Kansas City Plant

The only ongoing construction project requesting funding at KCP in FY 1999 is the Structural Upgrades Project (97-D-123) which will correct structural over stresses caused by gravity loads and will reinforce masonry walls to resist seismic loading within the DOE controlled portion of the Bannister Federal Complex. The proposed FY 1999 construction new start, Replace Boilers and Controls Project (99-D-125), will upgrade the existing steam generation facility that provides steam for heating, humidity control, and manufacturing processes for DOE and all other tenants at the Bannister Federal Complex.

Lawrence Livermore National Laboratory

A major retrofit to the Flash X-Ray Facility at Site 300, the Contained Firing Facility Addition (96-D-105), will provide containment of hydrotest debris and expanded space for diagnostics and will receive its final year of funding in FY 1999. In addition, the Site 300 Fire Station/Medical Facility subproject (96-D-102) is requesting final year funding in FY 1999 to provide emergency facilities at Site 300. There are also three new starts proposed for LLNL in FY 1999: the Rehabilitation of Maintenance Facility Project (99-D-102) will upgrade the existing facility used for site maintenance activities; the Isotope Sciences Facilities Project (99-D-103) provides for a major rehabilitation of LLNL's nuclear chemistry facilities; and the Protection of Real Property (Roof Reconstruction--Phase II) Project (99-D-104) is the second of three phases of a program to replace roofs at LLNL.

Los Alamos National Laboratory

The LANL Site-wide Environmental Impact Statement is being prepared and a draft should be distributed for comment in March 1998. The Chemistry and Metallurgical Research Facility Upgrades project (95-D-102) continues in FY 1999. Facilities revitalization will also continue at LANL in FY 1999 with final year funding requested within Project 96-D-102 for the Water Well Replacements and Fire Protection Improvements Subprojects. In addition, a new start is requested for the Central Health Physics Calibration Facility (99-D-105) to replace outdated equipment and calibration sources, and consolidate all of the existing LANL health physics calibration functions in one remote location to allow for calibration of instruments to the required high dose levels.

Nevada Test Site

Infrastructure support for the NTS is included under Strategy 5, Performance Measure A: Ensure that the capability to resume underground testing is maintained, in accordance with Presidential direction through a combined experimental and test readiness program.

Pantex Plant

The Pantex Site-wide Environmental Impact Statement was completed in FY 1997. The Sewage Treatment Upgrade project (96-D-122) is an ongoing project requesting final funding in FY 1999. The project will control process liquid waste from the sanitary system, industrial processes and storm water run-off . This project will allow Pantex to come into compliance with Federal and State discharge permit requirements.

Sandia National Laboratories

The Sandia National Laboratories (New Mexico) Site-wide Environmental Impact Statement has begun, with a Notice of Intent completed in May of 1997. Construction will continue in FY 1999 on the Process and Environmental Technology Laboratory (96-D-104), which will house research and development, materials science, process technology development and production support activities associated with maintenance of the stockpile. A new line item, the Model Validation and System Certification Test Center (99-D-106) will consolidate some and eliminate other older, obsolete and redundant testing command and control centers. The Storm Drain, Sanitary Sewer, and Domestic Water Subproject within Project 96-D-102 continues in FY 1999.

Savannah River Site

The Savannah River Site is in the process of completing a number of important National Environmental Policy Act documents associated with the Tritium Supply program. The Savannah River Accelerator Production of Tritium Environmental Impact Statement (EIS) final report is scheduled to be completed in the 3rd quarter of FY 1998. The Savannah River Commercial Light Water Reactor EIS draft report is scheduled for 3rd quarter of FY 1998, with the final report scheduled for the 1st quarter of FY 1999. The Savannah River Tritium Extraction Facility EIS is scheduled for the 2nd quarter of FY 1998, with the final report scheduled for the 1st quarter of FY 1999.

Y-12 Plant

Final year funding is requested for the Life Safety Upgrades Project (93-D-122). The project will upgrade and modernize fire protection systems, fire detection systems, alarm systems, emergency lighting, building egress, and emergency power for life safety equipment within the Y-12 Plant. The FY 1999 proposed new start, Replace Mechanical Utility Systems (99-D-123), will ensure reliability of mechanical utility systems serving areas vital to the current and long-range missions.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Maintain infrastructure and plant at Kansas City Plant	\$ 184,283	\$ 212,432	\$ 192,962
Maintain infrastructure and plant at Lawrence Livermore National Laboratory	\$ 49,758	\$ 57,717	\$ 55,384

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Maintain infrastructure and plant at Los Alamos National Laboratory	\$ 178,264	\$ 156,529	\$ 246,551
Maintain infrastructure and plant at Pantex Plant	\$ 206,953	\$ 191,821	\$ 186,504
Maintain infrastructure and plant at Sandia National Laboratories	\$ 166,100	\$ 166,200	\$ 213,345
Maintain infrastructure and plant at Savannah River Site	\$ 79,563	\$ 72,050	\$ 66,189
Maintain infrastructure and plant at Y-12 Plant	\$ 318,156	\$ 321,093	\$ 277,793
Infrastructure support through Operations Offices and INEEL Surety Activities	\$ 44,940	\$ 46,901	\$ 78,185
Total, Objective 3, Strategy 1, Performance Measure A	\$ 1,228,017	\$ 1,224,743	\$ 1,316,913

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 1: Provide an appropriately sized-, cost-effective, safe, secure, and environmentally sound national security enterprise.

Performance Measure B: The Stockpile Management Restructuring Initiative is on schedule to downsize and modernize future production capabilities.

The Stockpile Management Restructuring Initiative (SMRI) supports the implementation decisions related to production facility downsizing or relocation of missions resulting from the Stockpile Stewardship and Management (SSM) Programmatic Environmental Impact Statement (PEIS) and the Tritium Supply and Recycling PEIS. The Record of Decision for restructuring the production complex was announced on December 19, 1996. It involves the downsizing in place of weapons assembly/disassembly and high explosives at the Pantex Plant (PXP), nonnuclear component fabrication at the Kansas City Plant (KCP), weapons secondary and case fabrication at the Y-12 Plant, and consolidation of existing tritium operations at the Savannah River Site (SRS). In FY 1999 engineering design activities will continue at SRS and the Y-12 Plant, and begin at the KC and PX Plants. Activities associated with reestablishing a pit component fabrication capability at the Los Alamos National Laboratory are included under Performance Measure D.

98-D-123 Stockpile Management Restructuring Initiative-Tritium Facility Modernization and Consolidation, Savannah River Plant, Aiken, SC. Total Estimated Cost: 98,400,000.

The Savannah River Site project will relocate several process systems and functions from Buildings 232-H and 234-H into existing buildings within the Tritium Facility. High and moderate hazard processes will be relocated into Building 233-H. Low Hazard processes will be relocated to the North

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end of Building 234-H. The consolidation of tritium processing activities will improve the safety of operations, reduce environmental releases, improve productivity, and significantly reduce future operations and maintenance costs. The TEC for this project has increased due to the transfer into this line item of certain dual-benefit workscope previously planned to be included in the Tritium Extraction Facility line item (98-D-125). Additional details concerning this transfer of workscope is included in the construction project data sheet.

98-D-124 Stockpile Management Restructuring Initiative-Y-12 Consolidation, Y-12 Plant, Oak Ridge TN. Total Estimated Cost: \$42,500,000.

This project will enable the Y-12 Plant to continue its programmatic responsibilities associated with weapons secondaries, including the fabrication of components, the assembly/disassembly and surveillance of weapon secondaries and cases, and, potentially, storage of the Nation's strategic reserves of highly-enriched uranium. The Y-12 Plant has the required capabilities to support this mission; however, the oversized site configuration is inconsistent with projected workloads and thus unnecessarily inefficient. The Y-12 downsizing will consolidate all secondary and case manufacturing processes into significantly fewer existing production buildings. Two production buildings will be maintained in a cold standby status as a contingency and will be furnished with existing excess equipment.

99-D-127 Stockpile Management Restructuring Initiative -Kansas City Plant II, Kansas City, MO. Total Estimated Cost: \$122,500,000.

This project will allow the KCP infrastructure to be altered and reduced from the current plant profile, substantially reducing costs to operate. The project will change the existing plant and operational approach in four major aspects: a) physically reducing the size of the facility, b) changing the approach to manufacturing from product-based to process-based, c) reducing the support infrastructure appropriate for the right sized operation, and d) further streamlining the organizational structure to focus directly on the core manufacturing mission. Overall the floor space utilized by Defense Programs will shrink from about 3 million square feet to 2.3 million square feet.

99-D-128 Stockpile Management Restructuring Initiative -Pantex Consolidation, Pantex Plant, Amarillo TX. Total Estimated Cost: \$42,380,000.

This project will consolidate existing operations to newer facilities and/or will reduce the existing footprint of the Pantex Plant. This consolidation will permit vacating numerous World War II era structures and will result in reduced maintenance and operating costs and removal of temporary structures. Relocation of these activities into newer structures, with required modifications, will also improve safety, security, operational efficiency, and environmental compliance.

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Consolidate Tritium processes at the Savannah River Site (Construction and supporting operating costs)	\$ 0	\$ 14,000	\$ 30,450
Consolidate functions and reduce the operating footprint at the Y-12 Plant (Construction and supporting operating costs)	\$ 0	\$ 14,359	\$ 29,500
Consolidate functions and reduce the operating footprint at KC Plant (Construction and supporting operating costs)	\$ 0	\$ 0	\$ 14,581
Consolidate functions and reduce the operating footprint at the Pantex Plant (Construction and supporting operating costs)	\$ 0	\$ 3,911	\$ 4,905
Total, Objective 3, Strategy 1, Performance Measure B	\$ 0	\$ 32,270	\$ 79,436

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 1: Provide an appropriately sized-, cost-effective, safe, secure, and environmentally sound national security enterprise.

Performance Measure C: Adhere to schedules set forth in the Advanced Design and Production Technology Plan.

The requirements and objectives for the ADaPT Program and other advanced manufacturing programs are set forth in the Stockpile Stewardship and Management Plan (Green Book) and are further refined in the ADaPT Multi-Year Program Plan dated July 10, 1997. The goal of these programs is to reengineer the weapons complex product realization capabilities and support the Stockpile Life Extension Program by developing, validating, and implementing advanced tools, manufacturing processes, and practices needed to design, develop, and fabricate nuclear weapons systems and components of improved quality at reduced cost. The application of advanced manufacturing technologies will radically change the way the DOE designs, builds, and test systems and components by infusing new product and process technology and adopting modern business and engineering practices. ADaPT and supporting advanced manufacturing programs are the Defense Programs' vehicle for improving product realization within a downsized enterprise. ADaPT cuts across all levels of product development from the manufacture of materials to the integration of thousands of parts into a weapon.

Major long-term goals include the reduction of the occurrence of design and manufacturing defects in refurbished hardware by a factor of ten and the

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reduction of the time and cost required to realize these products by a factor of two.

The ADaPT's initiative sponsors four program elements to accomplish its main goals across the complex:

- C Enterprise Integration (EI), which provides new and improved information tools for DOE nuclear weapons design and manufacturing activities;
- C Integrated Product and Process Design (IPPD)/Agile Manufacturing(AM), which develops and deploys new design and manufacturing capabilities;
- C Process Development (PD), which develops and implement new production processes and continuously improves existing processes; and
- C Hedge Technologies (HT), which performs development activities to prepare to respond to possible contingencies.

The ADaPT program and other advanced manufacturing programs are carried out at the DOE weapon production plants and design laboratories-the Kansas City Plant, Y-12 Plant, Savannah River Site, Pantex Plant, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Sandia National Laboratories. ADaPT acts as a catalyst of change, pulling research and development products from the laboratories and industry and deploying them into the plants.

Funding supporting this performance measure is included in the ADaPT element of the Stockpile Management work breakdown structure (WBS) and the Systems Components Science and Technology element of the Stockpile Stewardship WBS. While the ADaPT program has subsumed the process development activities formerly carried out under the Production Capability Assurance Program, the other focus areas of the program were initiated in FY 1997 under a Draft Program Plan.

FY 1997 accomplishments include the completion of the ADaPT multi-year program plan, development of plutonium casting models, establishment of SecureNet interconnects between all plants and laboratories, establishment of a Wide Area Network at the Y-12 Plant to support factory floor data collection and process control, completion of Prototype Dimensional Inspection hardware for W87 program, completion of the Laser Cutting Workstation and preparation for delivery to the Y-12 Plant in FY 1998, and demonstration of a plutonium waste reduction prototype at LANL.

Performance expectations for FY 1998 include installation and use of the Laser Cutting workstation at the Y-12 Plant, completion of business practice plans, demonstration of preliminary plant process models, completion of prototype Integrated Product and Process Design scheduling system, simulation of product realization environment (SIMPRES) deployed at SNL and KC, completion of SecureNet need to know pilot, developing model-based manufacture on machine gauging, tool positioning, and modern inspection machines, and developing processes for requalifying existing components for reuse in refurbishment.

Performance expectations for FY 1999 include completion of the enterprise integration classified connectivity pilot demonstration, using SecureNet, completion of initial demonstrations of Integrated Process and Product Development (IPPD) Design Environment, demonstration of a prototype

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"Next Generation" machining cell, demonstrating a direct write approach for making integrated electronic devices and implementing modern engineering tools and methods for application to the W87 and other designs .

The performance measure assesses the degree of implementation of activities that support ADaPT. Success will be based on the successful completion of scheduled and funded activities as defined in the Multi-Year Program Plan.

SUPPORTING ACTIVITIES for Performance Measure C (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Provide Enterprise Integration Tools.	\$ 9,060	\$ 19,291	\$ 11,760
Development and deployment of new design and manufacturing capabilities (IPPD/Agile Manufacturing)	\$ 7,011	\$ 13,279	\$ 13,240
Develop and implement new production processes and continuously improve existing processes (PD)	\$ 40,091	\$ 40,305	\$ 37,600
Perform development activities to prepare to respond to possible contingencies (HT).	\$ 1,426	\$ 397	\$ 0
Develop manufacturing technologies to reduce occurrence of design and manufacturing defects and the time and cost of product realization.	\$21,517	\$ 16,626	\$ 16,162
Total, Objective 3, Strategy 1, Performance Measure C	\$ 79,105	\$ 89,898	\$ 78,762

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 1: Provide an appropriately sized-, cost-effective, safe, secure, and environmentally sound national security enterprise.

Performance Measure D: Meet schedules to rebuild, qualify and certify Trident II pits by FY 2001 and develop intermediate pit production capability of 20 pits per year at the Los Alamos National Laboratory by 2007.

In FY 1998, sufficient work through the Pit Rebuild Program should be completed to verify that the Los Alamos National Laboratory has the capability to build war reserve pits. Work in FY 1999 will build on the FY 1998 program, and manufacturing of a specific quantity of pits will be initiated for certification and ultimate placement into the nuclear weapons stockpile. This manufacturing period will be continuous to assure "lot" integrity for certification purposes, with small down time periods for facility maintenance and replacement of aged manufacturing equipment as

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required. The SMRI-Capability Maintenance Improvement Project would be the construction project for any facility improvements/upgrades beyond maintenance and replacement in-kind of equipment necessary to support the near-term manufacturing requirements.

In accordance with the Record of Decision on the Programmatic Environmental Impact Statement, the current objective is to establish a long term capacity for manufacturing up to 50 pits/year with a single shift of personnel. In the nearer turn we will achieve an annual capacity of 20 pits by 2007. A decision will be made on the specific capacity of manufacturing to be put in place at the Los Alamos National Laboratory and how best to achieve that capacity through discussions with the Department of Defense. Currently, it is envisioned that an outyear construction project, the Capability Maintenance Improvement Project, would provide necessary improvements to facilities to accommodate this manufacturing capacity.

Development of a contingency plan for larger quantity manufacturing has been placed on hold until sufficient information from the Pit Rebuild Program and subsequent manufacturing of war reserve pits clarifies the processes and specific equipment for manufacturing.

There are a number of other related construction projects at LANL. Although justifiable in their own right, the projects are nonetheless required for the successful resumption of pit manufacturing. These projects include the Chemistry and Metallurgical Research Facility Upgrades Project (95 -D-102), the Nuclear Materials Storage Facility Renovation (97-D-122), and the Nuclear Materials Safeguards and Security Upgrades Project (99-D-132).

SUPPORTING ACTIVITIES for Performance Measure D (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Produce a single WR pit per year at LANL beginning in FY 1998 and provide up to 10 pits annually into the stockpile beginning in FY 2001 to meet near-term requirements:	\$ 0	\$ 22,000	\$ 37,000
Support facility maintenance and equipment procurement at TA-55:	\$ 0	\$ 0	\$ 22,400
Continue design work to develop intermediate pit production capability of 20 pits per year by 2007:	\$ 0	\$4,420	\$7,235
Total, Objective 3, Strategy 1, Performance Measure D	\$ 0	\$ 26,420	\$ 66,635

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Objective 3: Ensure the vitality of DOE's national security enterprise.

Strategy 1: Provide an appropriately-sized, cost-effective, safe, secure, and environmentally sound national security enterprise.

Other Transportation and Logistics Capabilities:

The transportation program includes activities associated with providing safe and secure movement of nuclear weapons, strategic quantities of special nuclear material, nuclear test devices, selected non-nuclear weapons components, and limited-life components to and from military locations and between nuclear weapon complex facilities within the continental U.S. Specific activities include maintaining an aggressive vehicle maintenance program, maintaining a viable special agent training program, maintaining a nationwide communications system to continually track and privately communicate with convoys, supporting a scheduled replacement cycle for escort vehicles and armored tractors, and the production of the new Safeguards Transporter (SGT).

The transportation program is centrally managed and executed by the Federal work force, but the production and maintenance of the fleet is carried out at various sites located throughout the complex. The Sandia National Laboratories provides design, maintenance, and communication support. The Kansas City Plant is responsible for production of the SGT, vehicle modifications, training and communication upgrades. A fleet maintenance facility and a courier facility are located at the Y-12 Plant. Relay stations are located at Kansas City, Pantex Plant, and the Savannah River Site.

During FY 1997, all DoD shipping requirements were met and all program requirements for both dismantlement and quality were met. Development, long-lead procurement, and preproduction efforts on the Safeguards Transporter were completed. Production will be initiated in FY 1998 with the first production unit scheduled for delivery in January 1998. A total of 17 units will be produced during the period of FY 1998-FY 2000 to replace older Safe Secure Trailers. Six units are scheduled for production in FY 1998, an additional six are scheduled for FY 1999 and the remaining five are scheduled for production in FY 2000.

The container program includes activities associated with providing adequate quantities of containers to support the nuclear weapons mission. Activities include laboratory design and development for both transportation and storage, off-site transportation certification of component containers in accordance with federal regulations, off-site transportation authorization of non-certifiable nuclear material transportation configurations, and the associated production, packaging and maintenance of these containers. Key activities during the FY 1997 - FY 1999 period include the design of AT-400A like pit container fixtures, part production for the AT-400A pit container which will be used for the W48, providing H1616 containers for the shipping of tritium reservoirs, and providing technical design and review of the AL-2100 pit container which is being considered as a replacement to the AT-400A.

These activities are responsive to requirements/schedules included in the Production and Planning Directive, the Production Control Document-

Objective 3, Strategy 1

Retirements/Disposal, the Master Nuclear Schedules, the Nuclear Ordinance Shipping Schedule, and the Material Transfer Orders. Key success measurement for activities are the adherence to directive schedules by site, the quality of service, and compliance with safety requirements.

SUPPORTING ACTIVITIES (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Meet schedule for production of the SafeGuards Transporter.	\$15,300	\$15,400	\$10,100
Maintenance, repair of transportation fleet and communications systems.	\$51,100	\$53,600	\$59,900
Support container requirements.	\$21,801	\$18,043	\$16,067
Total, Objective 3, Strategy 1, Other transportation and logistics capabilities	\$88,201	\$87,043	\$86,067

Objective 3, Strategy 1

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 2: Ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements.

The science-based Stockpile Stewardship and Management program requires highly trained personnel to plan and execute the program, maintain the physical infrastructure, and archive necessary information for future use. Defense Programs efforts to maintain the proper level of personnel to carry out the programs are focused on three groups. The first are the scientific and technical personnel within the complex, the management and operating contractor employees. The second group are those individuals outside of complex, either in industry or universities, that can contribute scientific and technical advances into the program. And the third are the federal staff for coordinating, planning and overseeing the national enterprise.

The most fundamental ingredient of the science-based Stockpile Stewardship and Management program is the highly trained people necessary to execute the program. This includes the scientists and engineers at the laboratories that: investigate the material characteristics and physical processes of nuclear weapons and components; develop a scientific understanding of emerging issues in the stockpile; and finally, develop a science based resolution of the issue. It includes the engineers and technicians that produce, surveil, maintain, and ultimately dismantle the stockpile. It includes the maintenance and facilities staff that ensure the ongoing health of DP's physical infrastructure including equipment and buildings. It includes the many personnel required to ensure that DP carries out its mission in a manner that is safe, secure, environmentally conscience, and is protective of the health of the public. And it includes the required support, planning, and management personnel required to make sure the complex continues to operate in an efficient and effective manner.

Between FY 1992 and the end of FY 1997, Defense Programs-funded management and operating (M&O) contractor employment has decreased by over 27,000, more than 50 percent. During this period, the mission of Defense Programs transitioned from weapons design and production, with a laboratory focus on underground nuclear testing, to science-based stewardship of the enduring stockpile with a focus on the long term maintenance of existing weapons and dismantlements. This change in mission has required a new emphasis, with the attendant personnel, on the development of new scientific applications to replace underground nuclear testing, such as the Accelerated Strategic Computing Initiative (ASCI), the development and construction of the National Ignition Facility, and increased research to understand the scientific possibilities of pulsed power; the transition of the production plants to support long-term stockpile surveillance and maintenance operations through the application of advances made in the Enhanced Surveillance and Advanced Manufacturing, Design and Production Technologies programs; the development and provision of a viable, long-term source of tritium; and the capturing and archiving of the historical knowledge and expertise associated with production and testing methodologies and processes no longer in use but which may be required in the future to resolve a stockpile issue.

During the budget period, FY 1997 - FY 1999 Defense Programs will continue to work to insure that the M&O workforce is properly sized and configured to meet the needs of the evolving program. Particularly efforts will continue to focus on realigning the workforce to meet the new demands of science-based stockpile stewardship, to bring new high quality personnel into the production plants, and to archive the historical expertise of the

retiring workforce.

Defense Programs also recognizes that significant benefits to the program can be achieved through efforts to engage scientific and technical personnel in universities and industry. These partnerships, alliances and collaborations will allow the science-based Stockpile Stewardship and Management program to build upon the achievements of other public research organizations, primarily universities, and private industry in developing new technologies and processes that can be used in the Defense Programs laboratories and production plants. In the near-term these partnerships are focused in the cutting-edge technology areas of advanced manufacturing and design processes, enhanced surveillance technologies, and advanced computing hardware, software and networking.

Defense Programs is currently reengineering its federal staff and processes, consistent with the Department's Strategic Alignment Initiative and the results of the "120-Day Study." Responding to Congressional direction, Defense Programs commissioned a study of its management processes. This study, titled "The Organization and Management of the Nuclear Weapons Program" and commonly referred to as the "120-Day Study", was provided to Congress on June 4, 1997, along with Secretary Peña's recommendations for re-engineering Defense Programs. The four key changes outlined by the Secretary in his letter are 1) shifting responsibility for management and execution of environment, safety and health operations more to the area and site offices, 2) establishing a Core Technical Group to provide technical support to line managers, 3) forming a Stockpile Management Integration Council to facilitate and assist in the development of unified direction from Headquarters to the field on the Stockpile Management Program, and 4) establishing a systems analysis organization staffed by M&O contractors to provide Federal decision makers with information necessary for complex-wide execution of the program. The execution of these key changes will allow Defense Programs to meet or exceed its Strategic Alignment Initiative targets for staffing reductions.

PERFORMANCE MEASURES for Objective 3, Strategy 2 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Establish strategic alliance and collaborations among the weapons laboratories, industries and universities to enable effective use of scientific and technical personnel throughout the R&D community.	\$ 106,755	\$ 88,595	\$ 96,250
B.Implement the Strategic Alignment Initiative and recommendations of the 120-Day Study.	\$ 310,258	\$ 229,882	\$ 240,350
Total, Objective 3, Strategy 2	\$ 417,013	\$ 318,477	\$ 336,600

Objective 3, Strategy 2

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 2: Ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements.

Performance Measure A: Establish strategic alliance and collaborations among the weapons laboratories, industries and universities to enable effective use of scientific and technical personnel throughout the R&D community.

Defense Programs champions a strong program to support the scientific and technical community. The Technology Partnerships, Education, Inertial Fusion Science in Support of Stockpile Stewardship Financial Assistance Program, and the Accelerated Strategic Computing Initiative Academic Strategic Alliance Program efforts provide mechanisms to help the national laboratories, in concert with private industry and many colleges and universities, to advance toward common technology development needs.

Technology Partnerships exercise the competencies needed to meet the national security requirements for the weapons complex through cooperative activities between the nuclear weapons complex and the private sector. These partnerships also allow the weapons complex to build upon the achievements of private industry in developing cost efficient design and manufacturing infrastructures, as well as leverage the efforts of the weapons complex through collaborative work with industry on common technology development needs, providing dual benefits to the nuclear weapons program and US industry.

The majority of the activities are partnerships that have been selected on the basis of their contributions to the advanced technology needs of the weapons complex, principally at the nuclear weapons laboratories and the weapons production plants at Oak Ridge and Kansas City. These technology partnerships are supportive of a number of areas within Defense Programs including the Advanced Manufacturing, Design and Production Technologies program, the Enhanced Surveillance Program and core Stockpile Stewardship and Management objectives. Examples of other supported initiatives are: the American Textile Partnership and the Advanced Computational Technology Initiative.

Through the **Education** program, in the Stockpile Stewardship decision unit, Defense Programs will engage students and professors of colleges and universities (including minority institutions) in DP mission-relevant research as a means to enhance educational opportunities and build stronger ties to the academic community. Included in the Weapons Program Direction decision unit is funding provided for educational support activities in northern New Mexico: \$4 million to the Los Alamos School District and \$5 million for the endowment of a non-profit educational enrichment foundation. FY 1999 will mark the second of a five year program to provide the endowment for the foundation.

Core Stockpile Stewardship and Inertial Confinement Fusion provide support to (1) increase U.S. efforts in high-energy-density science relevant to inertial confinement fusion and stockpile stewardship by funding small research projects at universities and other private sector institutions; (2) promote interactions between such investigators and scientists at the nuclear weapons laboratories; and (3) assist in training scientists in areas relevant

to stockpile stewardship.

The **Accelerated Strategic Computing Initiative** (ASCI) program will continue to work closely with U.S. industry to accelerate its plans to provide computer systems far exceeding current industry projections, but essential to Stockpile Stewardship. ASCI will engage U.S. universities on critical simulation capability problems addressing physics, materials modeling, and computer science issues. The **Academic Strategic Alliance Program** (ASAP) under ASCI, formally announced by Secretary Peña on July 31, 1997, will provide \$250M over 10 years to fund computer-modeling research centers at the California Institute of Technology, Stanford University, the University of Chicago, the University of Utah and the University of Illinois at Urbana/Champaign.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Continue to support the DP mission through cost-shared collaborations with industrial partners.	\$ 55,212	\$ 51,901	\$ 60,000
Engage students and professors of colleges and universities (including minority institutions) in DP mission-related research as a means to enhance educational opportunities and build stronger ties to the academic community.	\$ 10,000	\$ 8,944	\$ 9,000
Continue support of the Los Alamos School District and the endowment of an education enrichment foundation for northern New Mexico.	\$ 33,890	\$ 9,250	\$ 9,250
Continue support for independent investigator grants in high energy density science relevant to stockpile stewardship.	\$ 1,153	\$ 3,000	\$ 4,500
ASCI Academic Strategic Alliance Program	\$ 6,500	\$ 15,500	\$13,500
Total, Objective 3, Strategy 2, Performance Measure A	\$ 106,755	\$ 88,595	\$ 96,250

Objective 3, Strategy 2

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 2: Ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements.

Performance Measure B: Implement the Strategic Alignment Initiative and recommendations of the 120-Day Study.

The required federal oversight, planning and coordination of the science-based Stockpile Stewardship and Management program primarily occurs at Headquarters, and the Albuquerque, Nevada, Oakland, Oak Ridge and Savannah River Operations Offices. Federal responsibilities include policy setting, planning and budgeting for the program; development of annual program guidance and oversight of M&O contractor execution of that guidance; coordination and consolidation of activities and plans among and between contractor sites; oversight of site facility maintenance and development programs; oversight of safeguard and security, and environment, safety and health activities associated with carrying out the DP mission; and oversight of total site "landlord" activities and responsibilities at the Los Alamos and Sandia National Laboratories, the Pantex and Kansas City Plants, and the Nevada Test Site.

Defense Programs is currently reengineering its staff and processes, consistent with the Department's Strategic Alignment Initiative (SAI) and the results of the "120-Day Study." The FY 1997 National Defense Authorization Act and the FY 1997 Energy and Water Development Appropriation Act recommended that the Secretary of Energy to develop a plan to reorganize field activities and management of the Defense Programs functions of the Department. To develop a basis for the reorganization plan, Defense Programs commissioned a study of its management processes. This study, titled "The Organization and Management of the Nuclear Weapons Program" and commonly referred to as the "120-Day Study", was provided to Congress on June 4, 1997 along with Secretary Peña's recommendations for re-engineering Defense Programs. The four key changes outlined by the Secretary in his letter are 1) shifting primary responsibility for management and execution of environment, safety and health operations to the area and site offices, with limited oversight by Headquarters and the operations offices, 2) the establishment of a Core Technical Group to provide technical support to line managers throughout the Defense Programs complex, 3) the formation of a Stockpile Management Integration Council to facilitate and assist in the development of unified direction from Headquarters to the field on the Stockpile Management Program, and 4) the establishment of a systems analysis organization staffed by M&O contractors from throughout the complex to provide Federal decision makers with information necessary for complex-wide execution of the Stockpile Stewardship and Management Plan.

The successful execution of these four key changes will allow Defense Programs to meet or exceed its Strategic Alignment Initiative staffing targets while maintaining adequate levels of management oversight of the program. The following table provides total DP staffing levels and SAI targets for FY 1996 - FY 2000:

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
DOE SAI Staffing Target for DP	2,045	1,963	1,896	1,878 ¹	1,739
Actual Staffing Level		1,992 ²	1,891		

The Defense Programs federal staff is essential for successfully carrying out each of the National Security objectives and strategies of the DOE Strategic Plan. Since the staff each support multiple objectives and strategies, the decision has been made to show all costs for federal staffing against this performance measure, as opposed to attempting to break out costs against every other category. This approach is consistent with the Department's accounting procedures, the budget structure, and recent Congressional guidance to consolidate program direction funding.

In FY 1997 DP made a final payment to the Mound Pension Fund as part of the transfer of this facility from DP to the Office of Environmental Management. This extraordinary one-time expense is reflected in support of this strategy.

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Re-engineer DP staff consistent with 120-Day Study and SAI	\$ 162,712	\$ 143,971	\$ 152,642
Re-engineer support and Operations Office landlord activities consistent with the 120-Day Study and SAI	\$ 113,077	\$ 85,911	\$ 87,708
Mound pension fund payment	\$ 34,469	\$ 0	\$ 0
Total, Objective 3, Strategy 2, Performance Measure B	\$ 310,258	\$ 229,882	\$ 240,350

¹FY 1999 and FY 2000 include 18 FTEs at the Albuquerque Operations Office associated with the transfer of responsibility from the Office of Environmental Management for management of waste management activities at the Los Alamos and Sandia National Laboratories and the Pantex Plant. For further information see the Executive Summary and Objective 3, Strategy 1, Performance Measure A.

²DP staffing at time of the transmission of the "120-Day Study" to Congress on June 4, 1997 was 1,992. FY 1998 SAI target of 1,895 is expected to be exceeded by the end of January, 1998. Thus, DP will reduce total staffing by over 100 positions within the first 8 months of beginning to implement the "120-Day Study" recommendations. The FY 1997 end of year staffing level was 1,951.

Objective 3, Strategy 2

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 3: Ensure and enhance protection of nuclear materials, sensitive information, and facilities.

Ensuring the protection of nuclear materials, sensitive information and facilities, often referred to as "Safeguards and Security" is an ongoing, day to day responsibility of Defense Programs. For the most part, conducting our program in a safe and secure manner is considered part of the routine manner in which we operate. For this reason, the vast majority of the activities associated with safeguards and security are included as part of the cost of performing our program missions.

However, this is not the case in two specific instances. The first is out of the routine upgrades to our safeguards and security infrastructure. The second is providing surveillance of nuclear materials for which Defense Programs is responsible, but for which Defense Programs does not necessarily have an ongoing programmatic interest.

Specific upgrades to our security infrastructure currently include upgrades to the security of the Superblock facility at the Lawrence Livermore National Laboratory. The upgrades at Superblock primarily are associated with hiring additional guards, particularly the formation of a Special Weapons and Tactics (SWAT) team and of a Special Response Team. At the Los Alamos National Laboratory, the renovation of the Nuclear Materials Storage Facility, construction line item 97-D-122, continues. This renovation will provide a significant improvement to the LANL security posture by providing a consolidated location for the remote monitoring and handling of materials in long-term storage. DP has decided to request this project in FY 1999 as a design-only project. A decision to proceed with physical construction activities will be made prior to the FY 2000 budget request. Additional information is included in the construction project data sheet.

We are also requesting a new construction line item for LANL, Nuclear Materials Safeguards and Security Upgrades Project (99-D-132), that will begin a series of upgrades to security systems of the whole laboratory. This first project provides necessary security upgrades to those areas of the laboratory primarily associated with the handling of nuclear materials, TA-55 and the Chemistry and Materials Research facility.

Defense Programs currently has U.S. origin nuclear materials for which it is responsible stored at the Y-12 Plant and Oak Ridge National Laboratory, the Los Alamos National Laboratory (LANL), the Savannah River Site (SRS), the Hanford Site in Washington, and the Idaho Chemical Process Plant at the Idaho National Environmental Engineering Laboratory (INEEL). Congress, in the FY 1998 Energy & Water Appropriation Act, transferred responsibility for DP materials at the Rocky Flats Environmental Technology Site and the Fernald Environmental Management Project (FEMP) to the Office of Environmental Management (EM) in order to simplify the management issues associated with environmental restoration activities at these sites. Consistent with this action by Congress, the Department is proposing to transfer responsibility for materials at other EM-landlord locations from Defense Programs to EM. These sites include SRS, Hanford, and INEEL. Also included in the proposed transfer are certain neutron source program materials at LANL.

Objective 3, Strategy 3

PERFORMANCE MEASURES for Objective 3, Strategy 3 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Continue, in FY 1999, material protection, control, and accountability upgrades at three DOE facilities with weapons-usable material.	\$ 12,454	\$ 16,900	\$ 24,937
B. No loss of U.S. origin nuclear materials in the U.S. and abroad from theft, loss, or illicit trafficking.	\$ 107,820	\$ 61,417	\$ 21,911
Total, Objective 3, Strategy 3	\$ 120,274	\$ 78,317	\$ 46,848

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 3: Ensure and enhance protection of nuclear materials, sensitive information, and facilities.

Performance Measure A: Continue, in FY 1999, material protection, control, and accountability upgrades at 3 DOE facilities with weapons-usable materials.

Defense Programs continues to upgrade protection, control, and accountability of its nuclear materials. These upgrades ensure that Defense Programs continues to maintain a robust protection and control system that takes full advantage of technical advances. Currently, Defense Programs has three major upgrades projects: an upgrade to the security systems of the Superblock facility at the Lawrence Livermore National Laboratory (LLNL), the retrofit of the Nuclear Materials Storage Facility at the Los Alamos National Laboratory (LANL), and a new start construction line item that will provide security enhancements at LANL.

As a result of vulnerability assessment, in FY 1997 LLNL began upgrading security (hiring more guards) at the Superblock facility. The upgrade will continue in FY 1998 with the recruitment, clearances and training of a new Special Weapons and Tactics (SWAT) team and implementation of a Special Response Team (SRT) plan. Other FY 1998 activities include providing upgrades to the Perimeter Intrusion Detection and Assessment System, alarm upgrades, explosive detection and a SRT training facility. In FY 1999, these upgrades will be fully functional and will begin their first full year of operation.

The Nuclear Materials Storage Facility Renovation at the Los Alamos National Laboratory (see construction project data sheet 97-D-122) is a renovation of an existing facility. Once the renovation is completed, the NMSF, with its large automated storage capacity and its built-in security features, will provide the most cost-effective means of storing special nuclear material at LANL. Security features of the NMSF will include fewer

Objective 3, Strategy 3

personnel with access to intermediate/long-term storage material, remote handling/access to stored material, a SafeGuards Transporter (SGT) garage for enclosed loading/unloading activities, and a tunnel for material transport to/from TA-55 processing areas within an existing Category I Protected Area. During FY 1997 initiation of Title I design activities were delayed to allow completion of a review of LANL construction management practices. It has been determined that the inclusion of the corrective actions identified by this review will significantly increase the estimated cost of Title I and II design. Therefore, DP has decided to request this project in FY 1999 as a design-only project. A decision to proceed with physical construction activities will not be made prior to the FY 2000 budget request, at which time an updated Title I quality cost estimate for physical construction will be provided to Congress. Additional information is included in the construction project data sheet.

The third materials security upgrades activity is the FY 1999 new construction project, Nuclear Materials Safeguards and Security Upgrades Projects, Los Alamos National Laboratory (99-D-132). The project has a pre-Title I estimated project cost of \$60.7 million. The NMSSUP will replace the existing LANL-wide security system, particularly security control systems such as computers and communications links, to address special nuclear material facility requirements. Follow-on projects are currently being reviewed which would provide upgrades to other areas of LANL security, although these projects are not yet ready to be included in this year's budget request.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Complete ash stabilization and packaging, and begin stabilization of other residue material at Superblock.	\$ 1,254	\$ 0	\$ 0
Complete implementation of Superblock security upgrade.	\$ 7,200	\$ 7,700	\$ 6,073
Nuclear Materials Storage Facility Renovation, LANL	\$ 4,000	\$ 9,200	\$ 9,164
Nuclear Materials Safeguards & Security Upgrades, LANL	\$ 0	\$ 0	\$ 9,700
Total, Objective 3, Strategy 3, Performance Measure A	\$ 12,454	\$ 16,900	\$ 24,937

Objective 3, Strategy 3

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise.

Strategy 3: Ensure and enhance protection of nuclear materials, sensitive information, and facilities.

Performance Measure B: No loss of U.S. origin nuclear materials in the U.S. and abroad from theft, loss, or illicit trafficking.

Defense Programs will continue to manage U.S. origin nuclear materials for which it is responsible at the Y-12 Plant and Oak Ridge National Laboratory. Congress, in the FY 1998 Energy & Water Appropriations Act, transferred responsibility for DP materials at the Rocky Flats Environmental Technology Site and the Fernald Environmental Management Project (FEMP) to the Office of Environmental Management (EM) in order to simplify the management issues associated with environmental restoration activities at these sites. Consistent with this action by Congress, the Department in FY 1999 is proposing to transfer management and funding responsibility for materials at remaining EM-landlord locations from Defense Programs to EM. These sites are SRS, Hanford, and INEEL. DP will retain ownership of national security materials. Also included in the transfer are certain neutron source program materials at LANL.

Defense Programs Materials activities support the storage, safeguards and security, materials control and accountability, and disposition of uranium 233 materials at ORNL (Building 3019). Specific activities performed by Defense Programs other than the general surveillance of the materials include:

- The processing of highly enriched uranium (HEU) scrap from across the DOE complex to improve the accuracy of measurements, to allow for increased efficiencies in storing the material, and to allow for other beneficial use of the material. This processing takes place at the Y-12 Plant and at commercial plants. Funds are provided to the Oak Ridge Operations Office for contracts to off-site commercial plants.
- The storing and safeguarding of excess uranium 233 at the Oak Ridge National Laboratory (ORNL) Radiochemical Development Facility (Building 3019).
- The recovery of materials from irradiated targets and the manufacture of radiation sources for Defense Programs and for other federal civilian and defense activities, at the ORNL Radiochemical Engineering Development Center.
- The consolidation of materials surveillance activities from Building 9206 to Building 9212 at the Oak Ridge Y-12 Plant.
- The operation of the DOE Precious Metals Pool provides for the administration and processing/decontamination of precious metals for sale or reuse within the Department.

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Maintain safe, secure compliant storage of DP nuclear material at EM landlord sites (transfer in FY 1999)	\$33,788	\$33,366	\$0

Objective 3, Strategy 3

Process HEU scrap	\$13,066	\$11,318	\$11,621
Process Pu-239/Be sources	\$2,168	\$1,881	\$0
Maintain safe and secure storage of excess of U-233 at ORNL, Bldg 3019	\$6,928	\$9,115	\$4,615
Recover Pu-242 and Fabricate Cf-252 sources at ORNL	\$5,894	\$5,737	\$5,675
Complete transfer of responsibility for materials at RF and Fernald to EM	\$44,788	\$0	\$0
Operation of the DOE Precious Metals Pool	\$1,188	\$0	\$0
Total, Objective 3, Strategy 3, Performance Measure B	\$107,820	\$61,417	\$21,911

Objective 3, Strategy 3

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise

Strategy 4: Provide DOE-related intelligence and threat assessment support to members of the national security community.

Defense Programs does not provide direct programmatic support for this activity.

PERFORMANCE MEASURES for Objective 3, Strategy 4 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Total, Objective 3, Strategy 4	\$ 0	\$ 0	\$ 0

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise

Strategy 5: Maintain test readiness and maintain and enhance emergency response and management capabilities to address any nuclear weapons, radiological or other emergency in the U.S. or abroad.

Defense Programs supports two major contingency readiness efforts: maintaining the capability to conduct underground nuclear tests, and maintaining the ability to respond to a radiological emergency.

Presidential Directive requires DOE to maintain **a capability to resume underground nuclear testing** within two to three years. Test readiness is composed of four main elements: technically competent personnel, infrastructure, special equipment, and procedures. The technical competency of the personnel at the Nevada Test Site (NTS) is maintained by participation in a robust experimental program supporting the nuclear weapons laboratories efforts coupled with a program to ensure that all critical testing functions associated with NTS-based skills, identified in the Stockpile Stewardship and Management Plan (Green Book), are exercised. The NTS maintains the essential infrastructure and special equipment required to field an underground nuclear weapons test. The archiving and resumption planning elements ensure the required knowledge is preserved and procedures are in place to resume testing. Test Readiness is funded by Stockpile Stewardship's Testing Capabilities and Readiness program element (mainly at NTS, but some support by the Sandia National Laboratories); funding is also provided by Stockpile Stewardship's Archiving program element at the Los Alamos and Lawrence Livermore National Laboratories. The status report on the state of test readiness will be the indication of success for this area of performance.

The DOE approach to nuclear test readiness is to maintain the site, facilities, equipment, and skilled people needed for nuclear testing. The certification and training of these resources is established through the conduct of the Stockpile Stewardship experimental program. This approach is taken because experience indicates that a "readiness only" program, without a technically productive experimental program, would have comparable costs yet would not effectively maintain personnel and skills. The program includes planned underground subcritical experiments requiring special nuclear material (SNM) and high explosives (HE), aboveground dynamic experiments that involve large quantities of HE, and other types of technical experiments at the NTS and weapons laboratories which provide data necessary to support the Stockpile Stewardship program.

Subcritical experiments, experimentation at weapons laboratories, experimentation at the NTS, work for others, archiving, stockpile management (including Nuclear Emergency Search Team (NEST) activities), and exercises contribute to nuclear test readiness by providing the opportunity for training, and exercising skills of testing personnel. Simultaneously, procedures, systems, equipment, and other critical elements of testing are maintained or improved. In some specific functional areas, necessary nuclear testing capabilities are not sufficiently maintained by the technical program; therefore, a mixture of experimentation and limited exercises are required to fully meet the readiness mandate (e.g., device assembly, transportation, and diagnostics developed). In cases where experiments and exercises cannot adequately address readiness requirements (for example, post shot drilling), the activity is documented and archived for reconstitution of that activity. The DOE's approach to complying with the Presidential

Directive requiring DOE to maintain a capability to resume underground nuclear testing within two to three years, is to maintain the capability to conduct a single nuclear test within that time period. If needed to solve a stockpile problem, any one or two additional nuclear tests would be completed in a relatively short time span (one to two years) after the first test. This "campaign" approach to nuclear testing is less costly in that it does not demand the maintenance of broader capabilities needed to resume a continuous, indefinite testing program of several underground nuclear tests that the Department conducted through FY 1992.

Funded under Stockpile Management, Emergency Response, **DOE's emergency response capability** ensures the availability and viability of our capability to respond to nuclear and radiological emergencies within the U.S. and abroad. Program direction and guidance is provided to the following seven major radiological assets/capabilities: the Aerial Measuring System (AMS), the Accident Response Group (ARG), the Atmosphere Release Advisory Capability (ARAC), the Federal Radiological Monitoring & Assessment Center (FRMAC), the Radiological Assistance Program (RAP), the Nuclear Emergency Search Team (NEST) and the Radiation Emergency Assistance Center & Training Site (REAC/TS). LLNL, LANL, and SNL support the assets at numerous DOE locations including the Remote Sensing Laboratory, Nevada Test Site, and Andrews Air Force Base. DOE Operations Offices at Albuquerque, Oakland, Nevada, Oak Ridge, Savannah River, Chicago, Idaho Falls, and Richland provide direct federal supervision. Asset resources such as communications, detectors and logistical support are cross-cutting and not strictly devoted to one asset.

The principal mission of the assets is to provide DOE's technical operational capability for worldwide response to a nuclear or radiological accident involving a nuclear weapon in either DOE or DOD custody. In meeting this mission requirement DOE possesses the ability to monitor and predict environmental impacts of radiation at major DOE and other Federal agencies' facilities in the event of an accident or incident. As a result of its nuclear weapon expertise first responder training and assistance can be provided to state, local and tribal authorities to initially address an accident or incident involving any radiological material. DOE's response is further rounded out by the ability to provide medical and health physics support to radiological accidents and incident resolution. Finally a close working relationship is maintained with the federal interagency and military to support the operations, exercise, and training of associates who provide technical assistance in responding to a threat by an individual or group to detonate a nuclear explosive or radiological dispersion device.

Federal interagency support is provided to numerous federal agencies including the Departments of Defense, State, Justice, the Environmental Protection Agency, the Nuclear Regulatory Commission and the Federal Emergency Management Agency. And working with the National Security Council, DP will be increasing its efforts to provide a more rapid response to the National Capital Area in the event of a nuclear incident.

Performance has been primarily measured by evaluation of the readiness of each asset to perform its mission in either real world or exercise conditions. Quarterly and after action reports are submitted by each asset to identify shortfalls as well as successes.

Objective 3, Strategy 5

PERFORMANCE MEASURES for Objective 3, Strategy 5 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. The capability to resume underground testing is maintained, in accordance with Presidential direction.	\$ 144,408	\$ 144,142	\$ 133,187
B. Emergency response assets are exercised in national, state and local drills to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad.	\$ 39,832	\$ 34,467	\$ 27,082
C. Improve response readiness to any possible weapons of mass destruction (WMD) and terrorist threat contingency using upgraded diagnostics and new equipment.	\$ 39,793	\$44,341	\$ 50,518
Total, Objective 3, Strategy 5	\$ 224,033	\$ 222,950	\$ 210,787

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise

Strategy 5: Maintain test readiness and maintain and enhance emergency response and management capabilities to address any nuclear weapons, radiological or other emergency in the U.S. or abroad.

Performance Measure A: The capability to resume underground testing is maintained, in accordance with Presidential direction

Presidential Directive requires DOE to maintain a capability to resume underground nuclear testing within two to three years. The DOE approach to accomplishing nuclear test readiness is primarily through maintenance of the Nevada Test Site (NTS), the appropriate facilities and equipment, and by the retention of the scientific professionals and technical support personnel at the three weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia National Laboratories), and within NTS contractor staff that are skilled in this field. Efforts in FY 1999 will include NTS personnel continuing archiving efforts, documenting 6 additional nuclear test activities.

Recognizing test readiness as a Presidential requirement to maintain the necessary skills and infrastructure for nuclear testing, DOE will perform other types of experiments and other stockpile stewardship activities that utilize critical skills and facilities, while addressing other problems of national importance. With the exception of participation in formal test readiness exercises, the goal is to maintain nuclear test readiness as a byproduct of these other programs, while minimizing the direct readiness costs. In particular, test readiness activities will entail: subcritical experiments (discussed in Objective 2, Strategy 3.A); aboveground experiments at the laboratories and the NTS; dual-use projects at NTS and the laboratories that support other customers; and archiving of the critical nuclear testing skills, experience, data, and knowledge.

Objective 3, Strategy 5

In FY 1999, work will begin on the acquisition of a new radio communications system for the Nevada Test Site (NTS). The NTS is mandated by law to convert from radios using 25 KHz bandwidth to 12.5 KHz bandwidth. Due to the large geographical area of operations (approximately 3,400 square miles) and rugged terrain, mobile radios are the only current technology available to meet the communications requirements of operations at the NTS. The 138kV Substation Modernization subproject (96-D-102) to maintain the electrical power supply system for ongoing programs at the NTS is continuing in FY 1999. A new line item, Renovate Existing Roadways (99-D-108), is requested to renovate 37 miles of the Mercury Highway, the primary road at the NTS.

The state of test readiness as indicated in the status report will be the indication of success for this area of performance.

SUPPORTING ACTIVITIES for Performance Measure A (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Activities maintaining the appropriate infrastructure, personnel knowledge and exercised skills necessary to conduct an underground nuclear test within two to three years.	\$ 135,638	\$ 133,182	\$ 121,935
Support NTS personnel to conduct diagnostic development and support AGEX activities.	\$ 4,935	\$ 6,503	\$ 5,185
Archiving in support of test readiness.	\$ 2,835	\$ 1,790	\$ 1,400
Construction line item support of NTS roads (99-D-108) and electrical systems (96-D-102).	\$ 1,000	\$ 2,667	\$ 4,667
Total, Objective 3, Strategy 5, Performance Measure A	\$ 144,408	\$ 144,142	\$ 133,187

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise

Strategy 5: Maintain test readiness and maintain and enhance emergency response and management capabilities to address any nuclear weapons, radiological or other emergency in the U.S. or abroad.

Performance Measure B: Emergency response assets are exercised in national, state and local drills to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad.

The Department of Energy is charged with the responsibility of maintaining the capabilities to respond to incidents involving nuclear weapons or radioactive materials. This includes developing, maintaining, and improving capabilities to detect and assess hazardous levels of radiation. Programmatic requirements and guidance for these capabilities are provided in the Federal Radiological Emergency Response Plan (FRERP), the

Objective 3, Strategy 5

Atomic Energy Act, Title 40 of the Code of Federal Regulations, Title 44 of the Code of Federal Regulations, DOE Order 5530.2 for the Accident Response Group (ARG), DOE Order 5530.3 for the Radiological Assistance Program (RAP), DOE Order 5530.4 for the Aerial Measuring System (AMS), and DOE Order 5530.5 for the Federal Radiological Monitoring and Assessment Center (FRMAC). Successful evaluation of this performance measure is achieved through the assessment of operations, exercises, and technical integration of each of the six assets including AMS, the Atmospheric Release and Advisory Capability (ARAC), ARG, FRMAC, RAP, and the Radiation Emergency Assistance Center and Training Site (REAC/TS).

Efforts will continue to evaluate and validate mission and operational readiness of the DOE emergency response assets through normal day to day operations. In FY 1999 each asset will participate in no-notice call-outs, emergency deployment readiness evaluations, and asset specific readiness drills. FY 1997 major accomplishments included the AMS completing thirteen separate surveys and one real world deployment. ARAC responded to five exercises and two requests for actual emergencies. REAC/TS responded to 55 calls for radiological medical assistance as well as conducted 13 training courses. RAP responded to 15 radiological incidents and over 20 alerts/referrals.

Examples of training and drills intended for FY 1999 include the Handshake III training drill, planned participation in 16 Nuclear Regulatory Commission (NRC) exercises, and participation in 20 state and local government radiological exercises. FY 1997 major accomplishments include the successful completion of Exercise Digit Pace, the first ever nuclear weapons accident exercise in which DOE assumed responsibilities as the Lead Federal Agency. All assets were key contributors to the completion of this event.

Success of technical integration efforts will be measured by the completion of mission critical projects such as field safing procedures (ARG), completion of the upgrade to the Hotspot analytical lab, computerization of ARG materials, improved safing fluids (ARG), implementation of enhanced analytical software (AMS), integration of air to ground telemetry system (AMS), and improvement of the prognostic, diagnostic, and dispersion models (ARAC).

SUPPORTING ACTIVITIES for Performance Measure B (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Maintaining emergency response operations.	\$ 25,004	\$ 26,623	\$ 19,517
Maintain the emergency response capability through exercises, drills, and training activities.	\$ 6,645	\$ 3,168	\$ 2,989
Integration of new technology	\$ 8,183	\$ 4,676	\$ 4,576
Total Objective 3, Strategy 5. Performance Measure B	\$ 39,832	\$ 34,467	\$ 27,082

Objective 3, Strategy 5

OBJECTIVE 3: Ensure the vitality of DOE's national security enterprise

Strategy 5: Maintain test readiness and maintain and enhance emergency response and management capabilities to address any nuclear weapons, radiological or other emergency in the U.S. or abroad.

Performance Measure C: Improve response readiness to any possible weapons of mass destruction (WMD) and terrorist threat contingency using upgraded diagnostics and new equipment.

The Department of Energy is charged, through Presidential Decision Directive 39, the Atomic Energy Act, as amended, and Executive Order 12656, to ensure that the U.S. Government is prepared to provide technical and operational assistance in the resolution of a nuclear terrorist crisis, within the U.S. and abroad. DOE's Emergency Response Program consists of five unique operational assets. These include: the Nuclear Radiological Advisory Team; Lincoln Gold Advisory Team; the Nuclear Emergency Search Team; the Joint Technical Operations Team; and the National Security Support Program. These assets utilize personnel from the Weapons Complex, National Laboratories and Nevada Test Site. These capabilities and expertise are made available to other government agencies (i.e., Federal Bureau of Investigation, Department of Defense, Department of State) as requested for support in a radiological/nuclear incident. Successful evaluation of this performance measure is achieved through the assessment of operations, exercises, and technical integration of each of the operational assets and their capabilities.

Efforts will continue to evaluate and validate mission and operational readiness of the DOE emergency response assets through normal day to day operations. In FY 1999 each asset will participate in exercises, drills and training events. These activities will be evaluated to measure their needs and requirements to ensure full readiness. FY 1997 major accomplishments included the completion of several exercises, deployment in support of the Presidential Inauguration, and deployment in support of the Denver Summit of the Eight.

To maintain the readiness of these assets, they are operationally exercised and trained to validate their ability to meet the current nuclear terrorist threat. Examples of training, drills, and exercises completed in FY 1997 are: Impact 97, NESTOR 97, Ellipse Foxtrot, notification drills, load out drills and the FY 1997 Jigsaw. Examples of training and drills intended for FY 1999 include: Ellipse series interagency terrorism exercises, advance technical exercise coordinated at the National Laboratories, and domestic terrorism response incorporating Federal, State and local responders. These events will ensure that the assets maintain /test their technical capability, can respond quickly, and effectively coordinate and communicate with other federal government agencies. In support of the Title XIV of the National Defense Authorization Act, DOE (DP) is tasked with carrying out training for first responders to weapons of mass destruction. DP administers the nuclear portion of this training.

The national laboratories propose technical integration (TI) projects to correct deficiencies associated with training, drills and exercise, and to maintain a leading edge technical capability. Through these TI advancements, existing technical capability is improved or new leading edge technical

Objective 3, Strategy 5

capabilities are integrated in the ability to perform search, access, device assessment, diagnostics, disablement, and render safe activities. Examples of significant developments in FY 1997 are MACII, Disablement tools validation and assessments, radiation dispersion prediction tools, and containment systems (foam generation). Technical progress and significant developments for FY 1999 are uranium search and diagnostics, radiographic analysis, access/intrusion technologies, field notebooks and computers, mobile search capabilities, containment systems, and atmospheric dispersion prediction tools. Progress in these technology areas are continually measured by scheduled reports, milestones, hardware production, field testing, and exercises.

Working with the National Security Council, DP will be increasing its efforts to provide a more rapid response to the National Capital Area in the event of a nuclear incident. Startup costs and equipment are requested for the first year.

SUPPORTING ACTIVITIES for Performance Measure C (\$ in Thousands)	FY 1997	FY 1998	FY 1999
Maintaining the operations of the WMD capability	\$ 18,878	\$ 20,467	\$ 27,028
Maintain the WMD response capability through exercises, drills, and training activities	\$ 6,008	\$ 10,964	\$ 10,743
Integration of new technology	\$ 11,082	\$ 12,910	\$ 12,747
Washington Aerial Measurements Operations Fac. 96-D-125	\$ 3,825	\$ 0	\$ 0
Total Objective 3, Strategy 5, Performance Measure C	\$ 39,793	\$ 44,341	\$50,518

Objective 3, Strategy 5

OBJECTIVE:4 Reduce nuclear weapons stockpiles and proliferation threat caused by the possible diversion of nuclear materials. {39M}

Defense Programs supports the nation's ongoing efforts to reduce the threat caused by the possible diversion of nuclear materials through its dismantlement program. These activities are coordinated in support of 1 strategy:

1. Dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile in a safe and secure manner. This strategy is essential for ensuring safe and secure weapons dismantlement. The dismantlement process is performed, in a safe and secure manner, by the production facilities with support from the laboratories. Weapons and their components are disassembled and properly dispositioned (includes demilitarization and/or sanitization or safe storage). Dismantlement is an ongoing program as weapons are/have been removed from the stockpile. The program will continue per the requirements of the Production and Planning Directive (P&PD) to eliminate excess stockpile quantities and systems based on national security requirements and in support of the surveillance program.

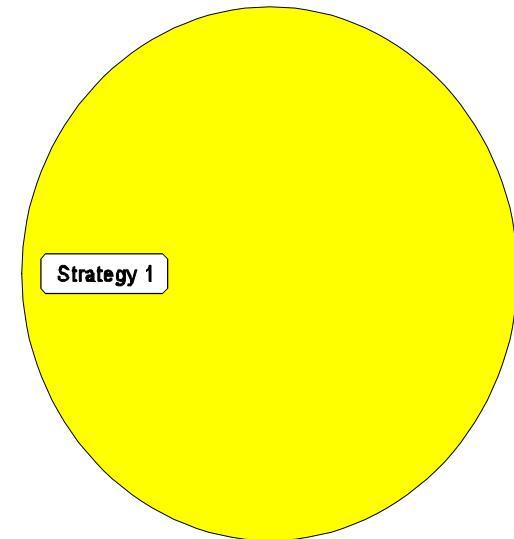
A matrix of funding by Strategy and Budget Structure follows. A detailed matrix by performance measure can be found on the following page.

(Budget Authority Dollars in Millions)

Objective 4	FY 1997	FY 1998	FY 1999
Strategy 1	68.9	67.9	39.1
Total, Objective 4	68.9	67.9	39.1

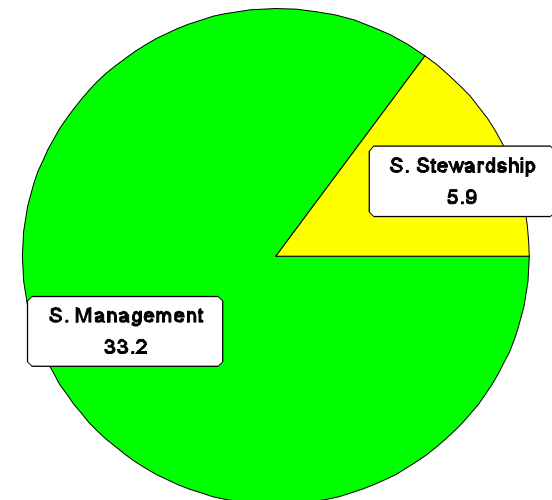
Objective 4: Reduce Nuclear Weapons Stockpiles and Proliferation Threat

Reduce Nuclear Weapons Stockpiles
and Proliferation Threat, By Strategy



FY 1999 \$ 39 Million

Reduce Nuclear Weapons Stockpiles
and Proliferation Threat, By Decision Unit



DEFENSE PROGRAMS
FY 1999 CONGRESSIONAL BUDGET REQUEST
OBJECTIVE 4: Reduce Nuclear Weapons Stockpiles and
Proliferation Threat caused by the Possible Diversion of Nuclear Materials
(Dollars in Thousands)

	FY 1997	FY 1998	FY 1999
STRATEGY:	1	1	1
STOCKPILE STEWARDSHIP			
Core Stockpile Stewardship			
Direct Stockpile Activities	12,602	14,585	5,925
Experimental Activities	0	0	0
Accelerated Strategic Computing Initiative	0	0	0
Special Projects	0	0	0
Performance Assessment Science & Tech'y	0	0	0
Systems Components Science & Tech'y	0	0	0
Chemistry and Materials Science & Tech'y	0	0	0
Stockpile Computing	0	0	0
Testing Capabilities & Readiness	0	0	0
Laboratory Capital Equipment & General Plant	0	0	0
Construction	0	0	0
Subtotal, Core Stockpile Stewardship	12,602	14,585	5,925
Inertial Confinement Fusion			
Operations & Maintenance	0	0	0
Construction	0	0	0
Subtotal, Inertial Confinement Fusion	0	0	0
Technology Partnerships	0	0	0
Education	0	0	0
Subtotal, STOCKPILE STEWARDSHIP	12,602	14,585	5,925
STOCKPILE MANAGEMENT			
Core Stockpile Management			
Weapons Program	56,323	53,301	33,219
Materials Recycle and Recovery	0	0	0
Production Support	0	0	0
Transportation Safeguards	0	0	0
Reconfiguration/Downsizing/Pit Production	0	0	0
Infrastructure Programs	0	0	0
Plant Capital Equipment & General Plant	0	0	0
Construction	0	0	0
Subtotal, Core Management	56,323	53,301	33,219
Enhanced Surveillance	0	0	0
Adv Manu, Design & Production Technology	0	0	0
Radiological/Nuclear Accident Response			
Operations & Maintenance	0	0	0
Construction	0	0	0
Subtotal, Rad/NUC	0	0	0
Tritium Source			
Operations & Maintenance	0	0	0
Construction	0	0	0
Subtotal, Tritium Source	0	0	0
Materials Surveillance	0	0	0
Subtotal, STOCKPILE MANAGEMENT	56,323	53,301	33,219
WEAPONS PROGRAM DIRECTION	0	0	0
TOTAL, DEFENSE PROGRAMS	68,925	67,886	39,144

OBJECTIVE 4: Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

Strategy 1: Dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile in a safe and secure manner.

This strategy is essential for ensuring safe and secure weapons dismantlement. The dismantlement process is performed, in a safe and secure manner, by the production facilities with support from the laboratories. Weapons and their components are disassembled and properly dispositioned (includes demilitarization and/or sanitization or safe storage).

Dismantlement is an ongoing program as weapons are/have been removed from the stockpile. The program will continue per the requirements of the Production and Planning Directive (P&PD) to eliminate excess stockpile quantities and systems based on national security requirements and in support of the surveillance program.

These activities are carried out throughout the Nuclear Weapons Complex with the Pantex Plant serving as the focal point for dismantlement activities and for the storage of nuclear components and materials. The Y-12 Plant supports the dismantlement program through the disassembly of canned subassemblies and military training units and serves as the National Repository for highly enriched uranium, lithium and other materials. The Kansas City Plant supports dismantlement through component characterization, processing, and population of the Stockpile Dismantlement Data Base (SDDB).

The three nuclear weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia National Laboratories) provide support to the dismantlement efforts through an on-site Tri-Lab Office located at the Pantex Plant. They develop dismantlement procedures, provide liaison, technical support, and assist in the dismantlement of weapons and components designed by their respective laboratory. The laboratories also support the characterization of components, population of the SDDB, and development of Nuclear Explosive Safety Studies.

Accomplishments for FY 1997 include the safe and secure dismantlement of 498 weapons including the successful completion of the W55, B61-2, B61-5, and W70. Work was initiated on the W69 and W56 and a recovery plan was developed to start the W79 dismantlement line in January 1998. An accelerated schedule for the earlier than planned retirement of the B53 was supported and weapons were moved to support depot realignment for the Navy.

Funding for this strategy is included in both Stockpile Stewardship and Stockpile Management.

The performance measure is the adherence to directive schedules for dismantlements per year as prescribed by the Program Control Document-Retirements/ Disposal (PCD-RD) and further defined in the Integrated Weapons Activities Plan. Both of these documents are issued by the Albuquerque Operations Office.

Objective 4, Strategy 1

PERFORMANCE MEASURES for Objective 4, Strategy 1 (\$ in Thousands)	FY 1997	FY 1998	FY 1999
A. Adhere to schedules for the safe and secure dismantlement of about 500 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.	\$ 68,925	\$ 67,886	\$ 39,144
Total, Objective 4, Strategy 1	\$ 68,925	\$ 67,886	\$ 39,144

OBJECTIVE 4: Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

Strategy 1: Dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile in a safe and secure manner.

Performance Measure A: Adhere to schedules for the safe and secure dismantlement of about 500 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.

The yearly weapons dismantlement schedule is prescribed in the Production and Planning Directive (P&PD) with specific monthly schedules by weapons type prescribed in the Program Control Document- Retirements/Disposal (PCD-RD) and further defined in the Integrated Weapons Activities Plan.

The main top level activities for this program are dismantlement of retired weapons, characterization of components from retired weapons, and long term storage of nuclear materials and components. The dismantlement processes are developed using an Integrated Safety Process for Assembly and Disassembly of Nuclear Weapons (SS-21) to ensure that safety aspects of the weapons processes are considered up front, during the process development phase, not reviewed after completion. SS-21 has eight contiguous phases, four milestones, and 33 networked steps. Weapon operation development must begin at least two years ahead of desired weapon production or disassembly startup steps. The schedule application of the SS-21 process to the retired and enduring weapons is contained in the Integrated Weapons Activity Plan.

These activities are funded within Core Stockpile Management under the Weapons Program element of the work breakdown structure. During FY 1999, the Pantex Plant is scheduled to dismantle approximately 500 weapons, characterize components from dismantlements, and provide long-term storage of nuclear materials and components. The Y-12 Plant will dismantle canned subassemblies consistent with the directive schedules and provide long-term storage of highly enriched uranium. The Kansas City Plant will continue characterization and disposition of components and the population of the Stockpile Dismantlement Data Base.

Objective 4, Strategy 1

The three nuclear weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia National Laboratories), provide support to the dismantlement efforts for the W79, W56, and W62. The laboratories support the dismantlement program through an on-site Tri-Lab Office located at the Pantex Plant. They develop dismantlement procedures, provide liaison, technical support, and assist in the dismantlement of weapons and components designed by their respective laboratory. The laboratories also support the characterization of components, population of the SDDDB, and development of Nuclear Explosive Safety Studies. Funding for the laboratories is provided by both Core Stockpile Stewardship and Core Stockpile Management.

The dismantlement program includes all activities associated with retirement; return, disassembly; component characterization; disposal or reclamation of materials and components; and the staging and storage of weapons, components and materials. Component Characterization Teams characterize all weapon components and related hardware to ensure proper disposition methods. All war reserve components, type units, testers, handling gear, base and military spares, use control and any other ancillary equipment used to support a weapon while part of the stockpile are included in the program.

Storage of weapons, materials, or components at a facility for the foreseeable future is also included in the dismantlement program. Specific activities related to safe storage are: planning; engineering; design, configuration and start-up of storage facilities; processing and packaging of materials for safe storage; costs of facilities and systems for storage activities; and nuclear materials management, including planning, assessment, and forecasting nuclear materials requirements.

Success is measured by meeting the schedule for safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.

SUPPORTING ACTIVITIES for Performance Measure A (Dollars in Thousands)	FY 1997	FY 1998	FY 1999
Dismantlement of retired weapons	\$ 28,829	\$ 22,066	\$ 8,373
Characterization and disposition of components from dismantlement.	\$ 3,829	\$ 6,973	\$ 5,338
Long term storage of nuclear materials and components.	\$ 17,770	\$ 19,336	\$ 15,953
Support Nuclear Explosives Safety Studies	\$ 5,895	\$ 4,926	\$ 3,555
Develop dismantlement procedures, provide liaison and technical support.	\$ 12,602	\$ 14,585	\$ 5,925
Total, Objective 4, Strategy 1, Performance Measure A.	\$ 68,925	\$ 67,886	\$ 39,144

Objective 4, Strategy 1